Forest Resources Commission

A Forest Practices Code Options Paper

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A Forest Practices Code

Options Paper

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Preface

This document provides the framework for detailed discussion on the format and processes required to implement a Forest Practices Code in British Columbia. These discussions will take place at a series of workshops around the province to be held in the first two weeks of May, 1992.

This Options Paper is based on submissions to the Ministry of Forests discussion paper (*A Forest Practices Code - July 1991*), the Commission's discussions with a number of stakeholder groups and various experts on forestry issues, and a review of Forest Practice Codes in other jurisdictions (see Appendix 2).

To assist workshop discussions, this document is divided into eight sections (excluding the introduction) that address specific issues surrounding the Code. It should be recognized that these issues are interrelated, and separation of the principal topics is inherently artificial.

Readers will find a number of questions in the margin of each section. These questions are designed to focus attention on some of the important issues that should be addressed when reviewing this document.

The options identified in this document are drawn from the Commission's public consultation process. The options do not represent the Commission's opinion or position on any issue. Instead, the options attempt to capture the diversity of opinions that were expressed, but they should not be considered mutually exclusive or totally exhaustive.

Following the workshops, the Commission will make recommendations to the Government on the framework for the Forest Practices Code.

1. Introduction

In April 1991, the Forest Resources Commission released its report, titled *The Future of Our Forests*, that recommended changes to the way the province's forests are managed. At the heart of the Commission's recommendations was the ethic of **enhanced stewardship**, which means the intensive, integrated management for all values on the largest land base possible. The objective was identified in the report's vision statement:

> "The forests of British Columbia will provide for the economic, environmental, social, and spiritual well-being of all British Columbians through successive generations" (*The Future of Our Forests*, page 8).

During its lengthy process of public consultation, the Commission concluded that the intensive, integrated management of the forest for all values required "a single, all-encompassing code of forest practices." It was recognized that many of the standards exist in different statutes and contract documents, but there was a need to consolidate and reduce inconsistencies.

Following this recommendation, the Ministry of Forests released a discussion document, titled *A Forest Practices Code*, to solicit public opinion on the scope, content and structure of the code. The initial deadline for submissions was extended to January 31st, 1992 to provide greater opportunities for public comment.

The Minister of Forests, the Honourable Dan Miller, announced in late January his intention to refer the Code to the Forest Resources Commission as a topic of inquiry and to make recommendations to Government. In his terms of reference, the Minister states that the objective of the code is to sustain British Columbia's forests and jobs by ensuring environmentally sound forest practices and a healthy working forest. He sees the code as an integral part of the government's land and resource planning process. In particular, the Minister requests that the Forest Resources Commission address the following issues:

- The framework of a Forest Practices Code, including any legislation or administrative processes required.
- The Code is to reflect input received from the public discussion paper, as well as any further consultation with various

professional and industry associations, labour, environmental and outdoor recreation groups.

- The economic and environmental effects of the Code.
- The means to monitor effectiveness of forest practices and to audit compliance with these practices.

The Forest Resources Commission has developed an extensive public consultation process. We have analyzed the public submissions to the Ministry of Forests' discussion paper (see Appendix 1), collected forest practice codes from different jurisdictions (see Appendix 2) and met with more than a dozen experts on forestry issues and 30 public stakeholder groups from around the province.

In many parts of British Columbia there is a growing consensus over the need for a Forest Practices Code. Many groups and individuals, often with traditionally divergent viewpoints, have publicly called for the introduction of a code.

The debate surrounding B.C.'s forests occurs at two distinct but overlapping levels. First, there is the debate over the type of uses that should be allowed on various areas within the forest (e.g., timber harvesting, recreation, water production, etc.) – this is referred to as land use planning. Second, there is the controversy over the way certain lands are managed, which is commonly referred to as forest practices.

Forest practices are carried out on all types of land. Much of the public concern over forest practices is directed towards those activities that accompany timber harvesting, such as road construction and logging. However, other types of forest practices include recreation, grazing, pest management, and wildfire suppression.

By definition, the Forest Practices Code will deal with land management issues, while land use planning will deal with land use issues. Land use issues are currently being addressed by the Commission on Resources and Environment (CORE), headed by Mr. Stephen Owen. The Government has given CORE the mandate to develop a provincial strategy for land use and a framework to help resolve land use disputes. There will be very important linkages between the proposed Forest Practices Code and CORE, which will be discussed in later sections.

What is a forest practices code? The term 'code' has become a catch-all phrase that means different things to different people. For some, a

code is a list of ethically-based principles that are not legally binding. Others believe that a code is a set of iron-clad laws that specify what activities are legal and the appropriate penalties for non-compliance.

In the current circumstances, we have decided to accept a standard definition of the word 'code', which is *a systematic collection of statutes, a body of laws so arranged as to avoid inconsistency and overlapping*. In this respect, the Canadian Criminal Code or Taxation Code can be considered structural analogies, with their mixture of legislation, regulations and procedures. The following instruments could be applicable to the Forest Practices Code:

- **Legislation** – enacted and amended by the Legislative Assembly and enforceable through the full powers of the government (e.g., *The Forest Act*).
- **Regulations** – enacted and amended by the Lieutenant-Governor-in-Council and have the full force of law (e.g., Silvicultural Regulations).
- **Prescriptions** – legal basis could vary, but they could be enforced through contract or licence agreements.
- **Guidelines** – no legal requirement to comply but they provide recommended processes and activities.

A critical process will be to identify what elements of a code should be attached to each instrument. This may be a value-laden and time-consuming process, and it could be difficult to arrive at a consensus solution. The Commission believes that the development of a Forest Practices Code will help clarify and streamline the existing regulatory instruments governing forest practices.

A.L. (Sandy) Peel
Chairman

2. The climate for change

Questions and issues to be addressed:

Throughout the public consultation process, the Commission heard a wide range of views on the need for a code and what it should achieve. People also expressed different opinions on the reasons why the Code had not been developed previously. This chapter is a brief summary of these opinions and it is intended to facilitate discussion on the objectives, constraints and the requirements of the Code.

2.1 Objectives

What do people hope to achieve with a Forest Practices Code? There is perhaps no simple answer to this question, because the Code is intimately tied to a person's or group's vision of the forest.

In its earlier report, the Commission noted that sections of society have different visions on the way humanity should interact with its forest land base. Some people called for a dramatic change in our consumer-based society, a reduction in timber harvesting and the preservation of large areas of forest. Others called for the maintenance of the status quo and a predominantly resource-based economy. In its final analysis, the Commission found the widest support for the concept of **enhanced stewardship**, which would see the forests managed in an intensive, integrated way to protect and enhance all forest values.

In the Commission's public consultative process, a number of specific objectives of a Forest Practices Code were identified:

- To establish the standards necessary for enhanced stewardship that will maintain the biological and physiological capacity of the forest.
- To give fair and equitable consideration to all forest users through the application of universally-applied standards.
- To create a flexible management system that puts responsibility on the user.
- To provide an open and timely decision-making process that is accountable to the public.
- To provide assurance to concerned individuals, both local and international, that the forests of B.C. are being managed in a technologically correct and ecologically sensitive (sustainable) manner.
- To increase the public's understanding of forest management in B.C.
- To be cost-effective and enforceable.

Can these objectives be achieved? Do you think they are consistent with generally-held values?

Questions and issues to be addressed:

2.2 Constraints

The development of a Forest Practices Code is not a new or revolutionary idea. Many jurisdictions around the world have introduced a code to govern the way their forests are managed (see Appendix 2). The reasons why a code has not been introduced in B.C. can only be speculated upon, but many groups point to the historical dominance of timber production in forest management.

It has been suggested that a Forest Practices Code was not needed because of the social contract between the general society and the main institutions (e.g., the Ministry of Forests, the timber industry, the Association of British Columbia Professional Foresters). As a part of their contract, these organizations have interpreted and responded to society's visions of the forest. For example, the industry in exchange for access to the timber resource has provided employment, supported communities, and helped open up the province for development.

Over the last decade, there has been a shift in society's values to place greater emphasis on non-consumptive uses of the forest and to be more concerned with humanity's impact on the environment. This has resulted in increased pressure to allocate land to non-timber production uses. Also, there has been social pressure to modify timber harvesting to minimize the impact on fisheries, water quality, wildlife and landscapes. These pressures have caused the administrative and legal structures governing timber harvesting activities to be adjusted on an ad hoc basis in response to particular concerns. Much of this new pressure has occurred on a local or regional level. One consequence has been the application of forest management practices on a regional and district basis that has resulted in inconsistent application of the same standards.

As society's values have changed, there has not been an explicit process to renegotiate the social contract with the affected institutions. Some groups have expressed concern about a perceived bias towards timber production in *The Forest Act* and its associated regulations. There is some uncertainty about the amount of authority, responsibility and accountability that should be given to the principal institutions. There is also a climate of mistrust between the various stakeholder groups, especially directed towards the forest industry and the Ministry of Forests.

Within the main forest institutions there is an innate resistance to rapid change. Forest management is a discipline of patience and long planning horizons that requires stability. As a result, there is a tendency to

tinker with the existing system by adding new planning mechanisms or instruments, rather than reevaluating the whole structure of forest management. This has tended to increase the inconsistency of forest practices designed to address new social concerns.

Questions and issues to be addressed:

Exhibit 1 - Some identified constraints

The implementation has been historically constrained by a number of social and economic factors:

- The administrative and legal structures governing forestry activities have been developed on an ad hoc basis in response to particular concerns. There has been no recent attempt to consolidate these structures into a comprehensive framework.
- Forestry activities have evolved on a regional and district basis which creates inconsistent standards for the same practices.
- There is some uncertainty about the amount of authority, responsibility and accountability that should be given to industry.
- There is also a climate of mistrust between the various stakeholder groups, especially directed towards the forest industry and the Ministry of Forests.
- There is an innate resistance in the forestry sector to change.
- There is a lack of resource data that constrains good decision-making.
- Funding for forest management has been inconsistent and dependent on the economic cycles.

Can these constraints be overcome? How?

2.3 Principles of a code

The principles are a critical part of the Forest Practices Code. The principles must provide some overriding vision for the Code's development and implementation. They should list the requirements that must be satisfied as the Code is developed and provide guidance to the interpretation and implementation of the Code in the field.

In its public consultation process, the Commission has been made aware of a large number of inherent principles that people feel are necessary if the Code is to achieve its stated objectives. The extensive nature of these

Questions and issues to be addressed:

result in a system that is overly complex and unworkable – in attempting to satisfy all concerns, the Code could end up satisfying none. In developing the options presented in the following chapters, these principles have been used as a preamble.

- STATED PRINCIPLES -

- The Code should be based on integrated resource management for all forest values, including fish and wildlife, air, water, soil, range, recreation and timber management.
- The Code should recognize that the physical and biological capacity, including biodiversity, of the forest is a key to the long-term sustainability of all resources.
- The safety of humans should be considered a high priority in timber harvesting activities.
- The economic viability and international competitiveness of the timber industry should be maintained through cost effective standards and implementation processes.

Do you support these principles? Should anything be added or deleted from this list?

- There should be an "all encompassing code" containing principles and prescriptions.
- Provincial, regional and ecological requirements must be recognized in the development of management practices and processes.
- Optimal standards for good forest stewardship will only evolve within a system that encourages good practices and penalizes poor practices.
- Enhanced stewardship and public accountability can be best achieved through a system of established standards for practices and processes, which can be assessed by independent audit.
- The Code should be explicitly linked to the land use planning process.
- The Code should be based on the existing policies, practices and experience acquired over time.
- Practices are evolutionary so there should be a process of review in response to new science and changing public values.
- The Code should be implemented in an open, verifiable and accountable manner.
- There must be a systematic process for public input in the development, review and implementation of the Code.
- The Code should be developed in an open and visible manner.
- The Code should encourage users to become properly trained.

3. Format of the Code

Questions and issues to be addressed:

Suggested principles

- *The Code should be based on integrated resource management principles*
- *There should be an "all encompassing code" containing principles and prescriptions*
- *The Code should be based on existing policies, practices and experience acquired over time*

Related issues

- *Structural elements of the Code*
- *Functional elements of the Code*

Throughout this discussion, there is a constant, reoccurring theme: What is a Forest Practices Code? According to the Oxford English Dictionary, a code is "a systematic collection of statutes, a body of laws so arranged as to avoid inconsistency and overlapping."

Accepting this definition, the Forest Practices Code can be viewed as having three interrelated components. First, there is the skeletal framework that defines the various legal instruments. Second, there are the specific prescriptions for planning and field practices. These prescriptions can be initially based on a consolidation of the existing rules and regulations as a first approximation (see Appendix 3); as more information becomes available, the prescriptions will evolve on an iterative basis. The final component consists of the people who develop and apply the prescriptions – individuals and organizations have a collective memory that acts as the unwritten component of the Code.

In reviewing the codes used in other jurisdictions, it is evident that each code has evolved to meet the requirements of the local situation. This chapter is intended to address the issues and options for the format of the Code. The discussion is divided into (1) the structural elements of the code; and (2) the functional elements of the code. The human element of the Code will be discussed in later chapters.

3.1 Structural elements

There are many different opinions expressed about the adequacy of the existing instruments governing forest management in B.C. Some

Questions and issues to be addressed:

groups and individuals suggested that the forests are not currently regulated and the government should pass laws to control timber harvesting activities. Others thought that there is too much flexibility in the interpretation and enforcement of existing rules and regulations in favour of a timber harvesting bias. There were also some submissions claiming that the existing requirements are already too onerous and there should be a move to deregulate the timber industry.

The management instruments can have a wide range of detail, flexibility and enforcement capabilities. Some examples and features of these instruments are provided in Exhibit 2. Many of these instruments can be designed and implemented to achieve a wide range of results – this reinforces the importance of clear objectives.

Option 1A - Prescriptive legislation

Under this option, all activities would be prescribed under legislation and/or regulations. This would be similar to the model adopted by California, Oregon and Washington State where the legislation specifies various administrative structures and processes, while the regulations detail actual field prescriptions.

Implications

- Lengthy development process to draft the legislation and regulations that meet exacting legal standards.
- The Code would be mandatory.
- All decisions under the Code would be open to judicial appeal and review.
- There would be little or no flexibility in the application and interpretation of the Code to meet B.C.'s diversity of conditions.
- It would be difficult to review and amend.
- All disputes would be resolved through the courts.

What is the best approach for British Columbia?

Option 1B - Enabling legislation

In this option, the legislation would provide the overall objectives for the Code and would establish any administrative arrangements. The regulations would prescribe the broad provincial processes needed to achieve these objectives, such as planning or public appeals. The lower planning and management instruments could be tailored to fit the local, site specific requirements. This is the approach used in Tasmania (Australia).

Implications

- The Code would be dependent on administrative interpretation.
- There would be a mix of mandatory and voluntary components.
- The Code would require a degree of trust between stakeholders based on a system of checks and balances.
- There would be flexibility within the Code to meet different site requirements.

Questions and issues to be addressed:

Option 1C - Voluntary compliance

The Code would consist of principles of forest stewardship and best management practices (BMPs). The current rules and regulations would continue to apply to forest users, but they would be expected to comply with the BMPs.

Implications

- The Code would be voluntary, with the existing mandatory requirements.
- Could be easily implemented at a low cost.
- It would provide considerable flexibility for users and allow for site specific prescriptions.
- It puts the onus on the users to improve their practices.
- Requires considerable trust by all stakeholders.

3.2 Functional elements

The functional elements of the Code describe the field prescriptions and planning procedures. All users would have some contact with the functional elements, since it would be this part of the Code that has an impact on the actual forest.

The functional elements can be designed in a range of ways to achieve the identified objectives. Throughout the public consultation process, there was a wide range of conflicting ideas expressed about the organization of the functional elements.

Are there presently enough rules and regulations? Is the problem a lack of enforcement of present regulations?

3.2.1 Emphasis of the code(s)

Much of the discussion has revolved around two differing points of view. Some people suggest that we should have a forest stewardship code under which all uses of the forest would be governed. Others

Exhibit 2: The current hierarchy of legal and management instruments

Instrument	Examples	Features
Legislation	• *The Forest Act* • *The Ministry of Forests Act* • *The Foresters Act* • *The Wildlife Act* • *The Range Act*	- Enacted and amended by the Legislative Assembly. - Enforceable through the full powers of the government . - Open to legal interpretation. - Can be prescriptive or enabling. - Usually a lengthy preparation and approval process. - Written in legal jargon. - Usually province-wide application.
Regulations	• Silvicultural Regulation • Timber Harvesting Contract Regulation • Forest Region Regulation • Range Regulation • Hunting Regulation	- Enacted and amended by the Lieutenant-Governor-in-Council. - Have the full force of law. - Open to legal interpretation. - Time for preparation and approval process may vary. - Written in legal jargon. - Usually province-wide application, but could be region specific.
Policies	• Forest planning framework • MoF Policy Manual	- Usually an administrative interpretation of legislation and regulations. - Provide direction for prescriptions and guidelines. - Open to administrative interpretation only. - Time for preparation and approval process may vary. - Written in plain English. - May be province, region or district specific.
Prescriptions	• MoF Cruising Manual • MoF Scaling Manual • MoF Engineering Manual	- Legal basis could vary, but they could be enforced through contract or licence agreements. - Time for preparation and approval process may vary. - Open to administrative interpretation only. - Written in plain English. - Usually site specific, but could have wider application.
Guidelines	• Coastal Fish/Forestry Guidelines • Total chance planning	- No legal requirement to comply but they provide recommended processes and activities. - Time for preparation and approval process may vary. - Open to administrative interpretation only. - Written in plain English. - May be province, region or district specific.

suggest that as timber harvesting is the most intensive activity in our forests, the Code should focus on the way timber harvesting is conducted in relation to all other values.

Questions and issues to be addressed:

Those who espouse an all encompassing forest stewardship code suggest that a single code should be based on integrated resource management principles that should address total forest ecosystem management regardless of land use designation. As one person noted, "We must adopt an attitude in which forest management means management of the entire forest for many outputs, both consumptive and non-consumptive, and for the benefit of humans and non-human species such as plants and animals."

Some people suggested that a single integrated resource management code would be too complex. As an alternative, various stakeholder groups could develop separate codes of practice for specific uses. Under this scenario, the timber industry would have a code that governs practices relating to timber production and the protection of other forest values. Recreationists would have a code to govern their activities and to minimize their impact on other users of the forest. Likewise for rangeland users, water catchment managers or any other distinct group.

Other people believe that there should be only one code that focuses on timber production activities with the protection of non-timber values. It is argued that society is mostly concerned with timber harvesting because these activities have the greatest impact on the forest environment. These people point to other jurisdictions where the emphasis is on timber production, even though the code refers to "forest practices." This type of code would identify the techniques and prescriptions to protect non-timber values during various phases of the harvesting operation.

Option 2A - A single code with emphasis on integrated resource management

The acceptable management activities could be arranged under broad categories (e.g., access management, recreation, water production, timber harvesting). This type of code would have to address the priority of activities when there may be a conflict. An example of some of the activities is provided in exhibit 3.

Implications

- Implies active management, rather than protection, of non-timber values of the forest.

Questions and issues to be addressed:

- The Code would have to address the complex interaction between activities (e.g., recreation in wilderness areas, timber harvesting in domestic watersheds, pest management in reserves).
- Requires a new, holistic view of the forest ecosystem.
- Would be expensive and time-consuming to develop.
- May be idealized approach, but impractical for field application.

Option 2B - Integrated resource management through multiple forest user codes

Separate forest user codes would provide a mechanism to manage the interaction between different stakeholder groups. Individual codes would make all players responsible for managing their impacts on the forest environment.

Implications

Which approach to a code would be best in British Columbia?

- The development process would be complex and time-consuming.
- Difficult to coordinate the interactions between the groups.
- It may be difficult to enforce with unregulated groups.
- It may create a sense of accountability for all stakeholders.

Option 2C - A single code with emphasis on timber management and protection of other values

This type of code would concentrate on the interaction between timber harvesting and other non-timber values of the forest. It would focus attention on the issues that are the greatest concern and provide mechanisms to minimize any impact on environmental values.

Implications

Should the Code apply to all forest resources or should it be explicitly linked to timber management activities?

- It would be compatible with other jurisdictions.
- The Code could be implemented relatively quickly.
- It would give people the impression that timber production is the primary use of the forests.
- It would focus attention on the timber companies, since they are the most intrusive forest user.

3.2.2 Activity-based versus objectives-based

There has been a lot of discussion around the organization of the Code according to activities or objectives. Some people believe the Code should be organized around activities, because this is evident in the use of the word "practices." A contrary view argues that the Code should specify the management objectives. Some of these objectives include

Exhibit 3 - Some management activities

Wildlife and Fish Habitat Management	Access Development
- browse and forage quality/quantity - fish habitat and special areas - calving and rearing areas - thermal, visual and predator protection cover - protection of endangered species - species diversity	- access management - road network patterns - road construction standards - bridge and drainage structures - road maintenance - road deactivation
Timber harvest	**Range management**
- rate of harvest - utilization standards - spatial distribution of harvesting - site disturbance and soil protection standards - season and method of harvest - riparian zone management	- cattle and wildlife interaction - forage production - range carrying capacity - stock distribution - forage use and timing - range improvement
Silviculture	**Protection**
- silvicultural systems (e.g. clear cut or selection) - pre-harvest silvicultural prescription - site preparation standards - vegetation management - reforestation - intensive silviculture standards	- fuels management - fire prevention - pesticide use - fire retardants and surfactants - fire site rehabilitation - control of insects and diseases
Water Management	**Planning**
- water temperature - watershed hydrology - protection of water quality and quantity - management of stream flow impacts	- prescriptions for biodiversity - integration of activities over the landscape and watershed - public involvement and information processes - hierarchy of plans (watershed plans, development plans, total chance plans, harvest plans)
Recreation Management	**Archaeological/Historical Site Management**
- wilderness prescriptions - site and trail standards - intensity and distribution - landscape management	- protection sites - interpretation facilities and recreation values

Questions and issues to be addressed:

the following:

- Maintain soil and site capacity
- Increase (or maintain) the viability of the timber industry
- Increase (or maintain) recreational opportunities
- Increase (or maintain) water quality and quantity
- Increase (or maintain) wildlife and fisheries habitat
- Maintain biodiversity
- Maintain attractive landscapes

Option 3A - Activity-based code

This option would break the functional part of the Code into specific activities. For example, there may be a separate document (or chapter) on each activity. These activities could be based on integrated resource management techniques or focus on timber production with the protection of other forest values.

Implications

- It may focus attention on specific activities rather than the overall consequences.
- It would fit most people's perceptions of forest practices.
- Easy to break into logical units for better understanding.

Option 3B - Objectives-based code

The Code would identify those practices that are compatible with each identified management objective. The Code could be broken into distinct segments that address each objective.

Should a British Columbia code be activity-based or objectives-based?

Implications

- It would reinforce the importance of the overall objectives.
- There may be internal conflicts between the objectives (e.g. fire protection and conservation of woody debris for wildlife).
- It may be difficult to implement in the field, unless the relative importance of the objectives are clearly addressed.

3.2.3 Results-oriented versus process-oriented

Another topic of differing opinion is the distinction between a results-oriented and a process-oriented code.

It has been argued that results, like management objectives, are the overriding concern. If a code achieves the required results, how one

achieves those results has little relevance. These results can be quantified in terms of different consumptive and nonconsumptive forest values – number of spawning fish, water quality and quantity, air quality, etc. It has been suggested that too much time and energy is wasted on bureaucratic systems designed to ensure that the process has been satisfied, which distracts attention from the original objective.

Questions and issues to be addressed:

With ever changing societal values, is it possible to judge a licensee on the results given the long time frame involved?

Those people who argue in favour of process claim that the long timeframes required for forest management prevent most people from seeing the results. They also point to the difficulty of measuring the ambient conditions (i.e., the condition of the forest value prior to disturbance), such as water quality and quantity. There is also a delayed effect for some disturbances (e.g., cumulative impact on a watershed) that make it difficult to measure the results. It has also been argued that the process is in itself important, since it provides a systematic way of addressing complex issues.

Option 4A - Results-oriented code

The Code would specify the management objectives, while allowing flexibility to achieve the desired results. There would have to be an objective measure of the results to gauge whether the practice is acceptable.

Implications

- Requires an objective measure of all ambient qualities.
- There may be a time delay before the results of some activities can be measured.
- Historic practices would have to be measured by the standards of the day.
- It would encourage users to be goal-oriented.

Which approach would be best for a British Columbia code?

Option 4B - Process-oriented code

The Code would specify various processes to achieve the desired results. Compliance with these processes could be monitored or audited.

Implications

- The Code would be compatible with most other jurisdictions and the current system, which are process-oriented.
- There would be reduced flexibility for the users to achieve the desired results.
- Processes are easy to modify as a result of new information.

Questions and issues to be addressed:

4. Applicable lands

Suggested principles

- *The Code should recognize the physical and biological capacity of the forest.*
- *Recognize provincial, regional and ecological requirements.*

Related issues

- *What is the link to land use planning?*
- *Public or private land?*
- *Conversion to other uses?*

There are a large number of land categories within B.C. In historic times, the government assumed title of all land in the province. It has subsequently used a range of mechanisms (designation, Crown grants, licences, lease and outright sale) to allocate land to different purposes to balance competing interests in society. The province has a total land base of 95 million hectares, which can be divided into a number of different land status categories (see exhibit 4). Most of the forest occurs on public lands (95 percent), while only four percent of the forest is found on private lands.

This chapter provides discussion on the type of lands where the Code would be applied. For many people this is simply a case of public versus private land, but there are other complicating factors. For instance, there are different types of public land that are managed for different purposes (e.g., should the Code be applied to wilderness areas?). Equally, there are different classifications of private land ranging from residential to managed forest lands that may be part of a Tree Farm Licence. Finally, there are lands beyond Provincial control, namely Federal and Aboriginal lands. This chapter will briefly discuss these issues.

4.1 Public land

The decision concerning what public lands should be covered by the Code is closely intertwined with the issues raised in the previous chapter. If the Code is based on integrated resource management principles, then it could theoretically apply to all lands that have forest cover. The narrow definition of a timber production code that protects environmental values would automatically exclude some land catego-

ries – the simple test is whether timber harvesting will occur.

Questions and issues to be addressed:

Recently, there has been criticism over the ad hoc allocation of provincial lands to different purposes. These criticisms were raised in *The Future of Our Forests* report, which outlined mechanisms for a more rational land use planning system – these mechanisms were detailed in a follow-up report titled *Land Use Planning for British Columbia* (December, 1991). The government has responded to these concerns by appointing the Commission on Resources and Environment (CORE) headed by Mr. Stephen Owen. CORE will develop a provincial strategy for land use and a framework to help resolve land use disputes.

The decisions that CORE makes concerning land use will have important ramifications for the Forest Practices Code. Public debate concerning B.C.'s forests occurs at two overlapping levels: first, is the debate over the allocation of land to certain uses (i.e., land use planning); and second, is the debate over the type and quality of the management practices. However, the levels are mutually reinforcing, since planning and practices are simply parts of a continuum. Under the current institutional arrangements, CORE will deal with the first level, while the Forest Practices Code will address the second level.

In traditional resource management models, land use planning is the highest activity in the management hierarchy that allocates forest to particular categories such as parks, wilderness areas or timber production. It is often referred to as the "broad brush" allocation of land at a provincial or regional level. Once a piece of land is designated to a category, it defines the type of management use to which it will be put and the management practices follow from that classification.

However, under integrated resource management principles, the forest available for timber harvesting is also managed for a wide range of other forest values. In many cases, this involves reserving land or modifying logging techniques for stream protection, visual quality objectives, wildlife habitat and biodiversity. In effect, this is a process of land use planning at the stand level, but these decisions are considered management practices.

Where does land use planning end and where do forest practices start?

4.2 Private lands

Many submissions to the Ministry of Forests' discussion paper expressed concern about the application of the Code to private land. This issue has been further highlighted by public protests over timber

Questions and issues to be addressed:

harvesting on private property near Prince George, in the Kamloops region and on the Gulf Islands. Any policy that restricts activities on private property is likely to have vocal proponents and opponents.

The people who support mandatory application of the Code on private forest land believe that there should not be double standards based on legal title. In their mind, the ecosystem requirements that need to be addressed within the Code must be applied to all lands, since some practices may have downstream effects on neighbouring property owners and public land.

The people who oppose the application of the Code to private land believe that there are strong philosophic arguments for minimal government interference with private property rights. One particularly contentious issue is whether private lands should be managed accord-

Exhibit 4 - Land status in British Columbia (1987)

Land status category	Area (Ha)	Percentage
Federal Land		
National Parks	475,999	0.5
Indian Reserves	341,077	0.4
Defence Lands	57,266	0.1
Transportation	15,477	-
Miscellaneous	31,579	-
Total Federal Land	921,398	1.0
Provincial Land		
Provincial Forests	73,897,568	78.0
Tree Farm Licences	6,440,779	6.8
Community Pastures	167,699	0.2
Provincial Parks	5,368,501	5.6
Regional Parks	8,128	-
Crown Land Under Land Act Tenure	379,606	0.4
Ecological Reserves (Land Only)	107,321	0.1
Total Provincial Land	86,365,602	91.1
Private Land	5,686,000	6.0
Total Land Area	92,973,000	98.1
Total Water Area	1,807,000	1.9
Total Area	94,780,000	100.0

Source: British Columbia Land Statistics, Ministry of Crown Lands (1989)

ing to visual quality objectives.

Questions and issues to be addressed:

The issue of private land is complicated by the existence of different categories. Private managed forest land, as classified by the B.C. Assessment Authority, must meet certain criteria as specified in working plans. When this land is incorporated into a Tree Farm Licence or a woodlot, it must be managed in conjunction with the public land. Unmanaged private forest land is not required to meet these management criteria, and it is often subject to conversion to other uses such as urban development.

Option 5A - All private forest land

The Code would be applied to all private forest land regardless of the management intent. There would be no minimum size constraints, because size is not a good criterion to measure possible damaging impacts on the environment.

Implications

- The distinction between public and private land would be reduced.
- The market value of some private land may be reduced due to any additional costs imposed by the Code.
- The government would have the mechanisms to regulate activities on these lands.

To what lands should a B.C. Code of Forest Practices apply?

Option 5B - Managed private forest land

The Code would be applied only to private managed forest land. This approach can be considered an extension of existing regulatory arrangements.

Implications

- Some people's concerns about private timber harvesting practices would be satisfied.
- It would be easy to police because owners would cooperate with the Code's requirements to gain the tax advantages that result from this land classification.
- The government already has mechanisms to regulate activities on these lands.

Option 5C - No private forest land

The Code would be applied only to public forest land and all private land and lease land would be excluded.

Questions and issues to be addressed:

Implications

- Some people's concerns about private timber harvesting practices would not be satisfied.
- There would be no means of regulating private managed forest land.

4.3 Conversion to other uses

Some of the concerns expressed about private timber harvesting operations have been related to the conversion of forests to other land uses. Prior to residential or urban subdivision, private property owners will harvest the standing timber. In some regions, the timber crop is worth more than the subdivision. There is also the issue of forest removal for agriculture, hydroelectric dams and easements, and for road construction.

Does the Forest Practices Code have a role to play in managing these activities?

In some instances, conversion to other uses can have a major impact on the biological and physical aspects of the forest. Dams can alter the microclimate of adjoining forests, easements can fragment the forest and allow the introduction of pests and diseases, and urban development can place increased demands on the surrounding forest.

Should a forest land reserve be established in a similar manner to the Agricultural Land Reserve?

In several jurisdictions (e.g., Oregon, California), there are mechanisms to review any decisions that may result in an erosion of the forest land base. In some respects, this could be considered equivalent to the review process for the removal of land from the Agricultural Land Reserve. There may also be other mechanisms outside the Code, such as any proposed environmental review legislation, that may be better suited to this purpose.

Option 6A - Include conversion to other uses in the Code

The Code would be applied to all activities that impact on the forest regardless of the intended management.

Should conversion to other uses be included in a Forest Practices Code?

Implications

- The Code would need to provide a mechanism for environmental impact assessment.
- The Code would affect a wide range of groups and organizations.
- It may result in additional costs and complications for the implementation of the Code.

Option 6B - Apply only to forest management activities

The Code would only apply to those activities that ensure or detract from the maintenance of the forest land base. Conversion of forest to other uses would be addressed under mechanisms such as the proposed environmental impact assessment legislation.

Questions and issues to be addressed:

Implications

- The Code would not cover some activities that may have major impacts on adjoining forest.
- Parallel administrative processes may develop, which could complicate public involvement and decision-making.

Questions and issues to be addressed:

5. Administration

Suggested principles

- *There should be cost-effective implementation processes.*
- *Recognize provincial, regional and ecological requirements.*
- *There should be a system of established standards that can be independently audited.*

Related issues

- *The separate functions of administration*
- *The role of existing groups and organizations*
- *The need for new administrative structures and their organization*

Administration can be viewed as the bridge between the conceptual and the actual. We commonly use organizations to achieve our social objectives – different objectives often require different administrative practices. This can explain the great diversity of administrative structures in our society.

There are a large number of organizations and individuals that are actively involved in, or have influence on, the management of B.C.'s forests. These include the various government departments (e.g., Ministry of Forests; Ministry of Environment, Lands and Parks; and the federal Department of Fisheries and Oceans), political parties, native peoples, the forest industry and its associations, labour unions, local governments, ranchers, woodlot owners and many special interest groups. These organizations and various individuals are often considered stakeholders in forestry issues.

Stakeholder groups exist in a complex landscape that is defined by various laws and social conventions. When we look at the administration of the Forest Practices Code, we must visualize the potential impact on this landscape. We must consider the administration processes that are needed to meet our identified objectives.

Should the Ministry of Forests or a separate government board administer the Forest Practices Code?

One of the overriding issues that must be addressed with the Code is the distinction between 'regulatory' and 'operational' functions. There is a widely held view that an organization should not regulate or police its own activities because of the inherent conflict of interest. A system must have organizational and functional processes to ensure that there are checks and balances to protect the public's interest.

5.1 Functions of administration

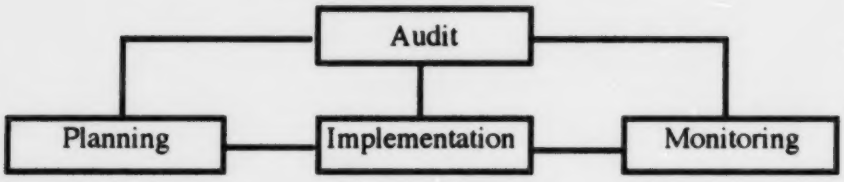
Questions and issues to be addressed:

Administration of the forests can be seen to have four distinct phases: planning, implementation, monitoring and audit. The relationship between these phases can be viewed in two different models (see Exhibit 5): the command-driven approach; or, the total quality management approach. In the command-driven model, planning leads to implementation and the results are monitored; auditing acts as a check on these functions. In the total quality management model, the processes are a part of a continuous learning cycle, with audits being an integral part of the cycle.

Under the current administrative arrangements, the various functions of forest management are completed by different organizations. On lands where timber harvesting is to occur, the companies are required

Exhibit 5 - Two models of administrative functions

I. Command-driven model



II. Total quality management model

Questions and issues to be addressed:

to do the planning and implementation as a condition of their contractual arrangements with the Ministry of Forests. Companies that have major tenure, such as a Tree Farm Licence or Forest Licence, must produce development plans, design and build roads, harvest the timber and carry out reforestation.

Each step in the process requires the approval of the ministry. In addition, major planning documents such as the development plans and the preharvest silviculture prescriptions (PHSP) are referred to other relevant government agencies for review. All field activities (road construction, logging, reforestation) are monitored to some extent by ministry staff, although the type and amount of monitoring have changed considerably over the last decade.

In the mid-1980's, the government decided to reduce direct monitoring of licensees by the ministry and use audits of a sample of areas to determine compliance. The shift towards audits was viewed as a way of maintaining ministry control of forest activities with substantially reduced staff and budgets. Previously, the industry had relied on the ministry staff to provide day-to-day field supervision, but internal company monitoring would help make industry more responsible for its activities.

After a period of approximately two years, the ministry reverted to having its own staff monitor the companies' activities. This decision was a response to concerns expressed by some groups who suggested that it was improper for the company to monitor itself. A common comment was "The fox was guarding the chicken house." However, the ministry continues to audit some licensees' areas and reforestation.

Under the Small Business Forest Enterprise Program (SBFEP) the ministry acts in the same capacity as major licensees: it plans, builds roads, reforests harvested areas and performs other required functions. This creates opportunities for small operators to bid on the timber harvesting rights. Audits of these activities are carried out by ministry staff (or contractors) who were not involved in the planning, implementation or monitoring.

Who should do the monitoring?

In its public consultations, the Commission heard considerable discussion on mechanisms for the administration of the Forest Practices Code. One of the more contentious issues is the decision over who should monitor forest practices.

Some people argue that monitoring is a government function. It allows a regular inspection of forest practices with the aim of preventing or mitigating activities that could result in irreparable damage. This approach assumes that administrative functions are best represented by the command-driven model.

Questions and issues to be addressed:

Others argue that monitoring is an internal company function. They suggest that there is an important learning process that is dependent on good information flows between the people who plan, implement and monitor forest practices (i.e., the total quality management model). When the ministry or some outside agency does the monitoring, this critical learning cycle is broken and there is an increased likelihood of repeated mistakes.

Option 7A - Ministry of Forests does the monitoring

The Code would be administered under the current arrangements where the industry plans and implements activities following the ministry's approval. The ministry would also constantly monitor the activities in the field.

How much staff does the Ministry need to carry out a monitoring role effectively?

Implications

- There would be no learning link between the monitoring and implementation functions.
- The government would have to bear the cost of monitoring, although this could be charged to the industry (otherwise this could be seen as a government subsidy).
- The Ministry of Forests may need additional staff for monitoring.
- The ministry would continue to be responsible for the SBFEP.
- Some companies would continue to be dependent on the ministry for professional services.

Option 7B - Internal monitoring and external audit

The organizations that are responsible for planning and implementation activities would also do the field monitoring. There would be independent audits to ensure that the practices satisfy the standards, and sufficient penalties and incentives to encourage good performance.

Do the licensees have sufficiently qualified people to carry out the increased levels of monitoring?

Implications

- Companies and the ministry would be held accountable for their administrative performance.
- Internal monitoring may be more efficient.
- The government must be willing to use the appropriate penalties and the incentives, otherwise there could be reduced performance.

Questions and issues to be addressed:

- The independent audits become a critical component of the administrative system.

The role of audits

In *The Future of Our Forests*, the Commission recommended the establishment of a system of independent audits to assess performance and to publicize the results of forest management practices to a broad audience. This recommendation stemmed from the broad support for the concept of auditing in our society as a means of checking compliance with established standards – for example, the taxation code is policed on an audit basis. Audits are seen as an integral part of the Code to maintain public accountability and credibility with the administrative arrangements.

Auditing is based on periodic checks by an independent body. The proponents of an audit system claim that it encourages users to develop internal procedures for monitoring and review – thus the learning cycle is maintained. Auditors usually base the frequency of inspection on an assessment of the risk of noncompliance, so the process can be undertaken efficiently and in a cost-effective manner. It also helps create a climate of public disclosure through the publication of audit reports and a high level of personal accountability – and empowerment – that can be enforced through strict penalties for noncompliance.

Most of us are familiar with financial audits that are conducted in accordance with Generally Accepted Accounting Principles (GAAP) where the firm pays independent auditors to perform the audit. For forest management, there could be a system of Generally Accepted Forestry Principles (GAFP) that could provide the framework for audits. The content of these principles will depend on the type of code chosen (the emphasis of the Code, process-oriented or results oriented). The principles would need to have measures and standards that can be satisfied without contention - any competent person would reach the same conclusions in a given situation. The results of the audit could be published in an annual report that provides an independent check on the status of the forest management.

If such independent audits are to be carried out on forest managment practices, who should pay for the audit? The government (taxpayers) or the company being audited?

As mentioned above, audits are already used in B.C.'s forests. The Ministry of Forests audits the performance of some licensees in selected areas. Adherence to the silviculture regulations is audited on all Provincial Forests by the Ministry of Forests – licensees are audited by the District audit forester, while the SBFEP is audited by regional staff.

There are several options for using audits in the administration of B.C.'s forests.

Questions and issues to be addressed:

Option 8A - Current audit arrangements

The planning and implementation of timber harvesting activities, like road construction, logging and reforestation, would be audited by the ministry staff. The district staff would audit the licensees, while the regional staff would audit the SBFEP.

Implications

- The audit process would continue to be an adjunct to existing monitoring arrangements.
- The audits may not be seen as being completely independent.
- Activities would be audited by people who understand the local requirements.

Option 8B - A new audit branch

A new forest audit branch would be established in the ministry that answers to the Chief Forester. The branch would audit all activities on an integrated resource management basis, and would make its reports public.

Can the Ministry of Forests audit its own management practices?

Implications

- Like any internal policing agency, the new branch may be subject to internal ministry pressures and politics.
- Increasing the head office function in the ministry may be seen as a bureaucratic solution by the field staff and the industry.
- There may be conflicts with other agencies that have a role in forest management.

Option C - Independent auditors

Independent auditors would be established in a similar fashion to the financial industry. The auditors could be licensed firms that have a wide range of professional expertise, or licensed individuals who act on behalf of other experts. The auditors would make their report to the public through the minister, an independent body or the Ministry of Forests. The auditors would be paid by either the client (i.e., the licensee or the ministry) or by the government.

Questions and issues to be addressed:

Implications

- A new tradition of independent auditors would have to evolve.
- The system could be subverted by whoever pays the auditor's fees.
- There would need to be some mechanism to ensure the honesty and the accuracy of the audit reports.

5.2 Administrative organizations

It has been suggested that the administrative landscape must be totally redesigned to ensure that acceptable standards of forest stewardship will be achieved. It has been argued that the current organizations have evolved in an adversarial environment that placed different forest values in direct conflict. Also the Ministry of Forests has an ingrained bias towards timber production, which is no longer considered appropriate.

In *The Future of Our Forests*, the Commission concluded that the policy and regulation functions of the Ministry of Forests should be separated from administrative functions relating to timber harvesting. The suggested solution was to have a Ministry of Renewable Natural Resources that would be responsible for policy, planning and regulation, and a Forest Resources Corporation that would be responsible for direct and delegated management and for collecting revenue. This organizational arrangement was seen as a way of reducing the conflict between advocacy line ministries, while recognizing that some forest activities should be carried out on a commercial basis.

Recently, a number of groups have called for greater community involvement in the management of the forests in response to the philosophies of bioregionalism. It is suggested that community forest resource boards would be more accountable to the needs of local people. There are different opinions on the amount of authority that should be given to these bodies: some people suggest they should be completely autonomous with ministry staff providing administrative support; others believe the boards should only have an advisory or appeal status.

Another alternative is to establish an independent Forest Practices Board with public representation that reports directly to the Legislature. Independent boards have been established in Alaska, Washington, Oregon and California. Members of the board can either be appointed by the minister (or cabinet) or elected directly. There is a wide range of models for public and special interest representation in

B.C. such as the school boards, hospital boards and the Liquor Licensing Board. To maintain a cooperative relationship with the Ministry of Forests, the Chief Forester could be a member of the board.

Questions and issues to be addressed:

Option 9A - The status quo

Maintain the existing organizations that are involved in forest management. Any conflicts can be addressed through the development of new policies and procedures.

Implications

- The Code would be administered by the Ministry of Forests with consultation with other organizations
- Many of the existing problems may not be resolved.
- There would not be any dislocation or social conflicts that result from dramatic changes in social administration.
- People dissatisfied with the existing arrangements would continue to use other avenues (e.g. political lobbying, the media, public protest) to achieve their aims.

What administrative structures, or combination of administrative structures would best serve the needs of British Columbians?

Option 9B - New public organizations

The establishment of a Ministry of Renewable Natural Resources and a Forest Resources Corporation would rearrange the government's role in forest management.

Implications

- The Code would be administered by the Ministry of Renewable Natural Resources, and it would require audits on licensees and the Forest Resources Corporation.
- Adversarial roles between different ministries would be internalized in the new "super" ministry.
- The new ministry would be responsible for all forest values.
- The Corporation would have a clear mandate to pursue commercially-oriented timber management activities.
- There may be a difficult transition period for ministry staff as they adjust to their new roles.

Option 9C - Community forest resource boards

Community resource boards could be established for each district or other distinct geographical area. The boards could be elected, appointed or some mixture of the two. The boards would be responsible for the administration of all activities in their area, and existing ministries would provide support services to the boards.

Questions and issues to be addressed:

Implications

- The Code would be administered by the local boards who carry out audits on licensees and the Ministry of Forests.
- There would be a major reallocation of power within the province.
- There would have to be a mechanism to ensure that the rest of the province is not adversely affected by a board's decision.
- It could result in a lack of uniformity.

Option 9D - Forest practices board

An independent board be established to develop and implement the Forest Practices Code. This Board would report to the Legislative Assembly, in a similar manner to the Auditor General or the Ombudsman. The Board would have public representation through election or appointment. The Board would implement the Code through licensed independent auditors.

Implications

- The Board would assume some of the responsibilities of the ministry, such as audit procedures and standards.
- The Board may be viewed as additional bureaucracy.
- The Board would have to be held accountable for its actions, since it could create additional costs for forest users
- Regional requirements would have to be recognized in the Board's decisions.
- Could be viewed as increased concentration of power in Victoria and away from the local communities.

6. Incentives and penalties

Questions and issues to be addressed:

Suggested principles

- *Optimal standards for forest stewardship will only evolve within a system that encourages good practices and penalizes poor practices.*

Related issues

- *Types of incentives.*
- *Types of penalties*
- *Administrative will to use remedies*

Throughout its public consultation process, the Commission has heard that the Code must result in good forest practices. To achieve this goal, some people believe that standards need to be specified and suitable penalties applied to the miscreants. The problem with this approach is that standards establish the upper threshold of performance, and it is unlikely to encourage forest managers to aspire to better practices. Also, penalties will only work when there is an administrative and political willingness to apply them.

In general, our society enforces acceptable behaviour through different rules and punishment for noncompliance. This is a process that psychologists refer to as negative reinforcement. Forest administration is most enforced through this process with a range of penalties set out under various acts and regulations (e.g., *The Forest Act*, *The Range Act*, *The Wildlife Act*).

It is also possible to reward good performance in forest management (i.e., positive reinforcement). In the traditions of self-interest, organizations may be more willing to achieve good forest stewardship if there is something in it for them. A system of suitable incentives may be needed in the Code to encourage the best performance.

This chapter will look at the issues surrounding the use of suitable incentives and penalties in the Forest Practices Code, and the environment that is needed to ensure their application. Many of these issues relate specifically to the timber industry because of its significant influence on forest practices, however they could easily apply to other regulated users of the forest.

Is a combination of rules, penalties and incentives the best way to achieve superior stewardship of our forests?

Questions and issues to be addressed:

6.1 Incentives

A number of incentives have been suggested to help achieve enhanced stewardship of B.C.'s forests. It should be noted that the following options are not mutually exclusive, and each could be considered as a part of a comprehensive package of incentives for all or some forest users.

Option 10A - Marketing seal

Would a marketing seal provide a reasonable incentive? What would the customers' response be to the seal?

It has been suggested that an official Forest Stewardship Seal be produced that could be used by companies that satisfy the standards of the Forest Practices Code. This seal would have to have public and market recognition to be effective. To act as an incentive to companies, the seal would have to have prestige and stringent granting requirements tied to a public audit of practices. Non-compliance would result in immediate removal of the seal privileges.

Currently, the lumber industry has a system of grade stamps that are administered by industry associations. Compliance with the grades is regularly checked by an inspector. A company that is found to be incorrectly applying grades can have its grading stamp removed, which may result in reduced sales or lower prices for its ungraded products.

Implications

- Mainly applicable to the timber licensees.
- May help the timber industry market products in some international markets and avoid boycotts.
- Relates directly to a company's bottom-line and its marketing efforts.
- The seal could be replicated by other jurisdictions, which would reduce its marketing effectiveness.

Option 10B - Increased flexibility and efficiencies

Another potential incentive is the possibility of increased operating flexibility. Under the current arrangements, a licensee must have the approval of the Ministry of Forests and other agencies prior to any activity and is then subject to on-going monitoring and follow-up

Note: These options are not intended to be be mutually exclusive.

audits. A licensee that is practicing enhanced stewardship could obtain quicker approvals and reduced monitoring and audit. The ministries, in assessing the risk of failure, would be more likely to concentrate their resources on the poor performers.

Questions and issues to be addressed:

Should proven good performance be rewarded with reduced supervision and audit?

Implications

- Could result in increased internal efficiencies and reduced costs for licensee.
- It is often cheaper and more efficient to do the job right the first time, than to constantly resubmit plans that are rejected by the various ministries.
- Can be viewed as a part of the concept of total quality management.
- May be criticized as giving industry too much flexibility.

Option 10C - Increased security of tenure

Some groups have suggested that increased security of tenure could give licensees greater ownership of the resource and the 'fruits' of their labour.

In *The Future of Our Forests*, the Commission recognized that enhanced stewardship was closely related to the issue of tenure. It decided that self-interest was the best force to provide the necessary investment in the forest, and this could only be achieved through secure, area-based tenure. For this reason, the Commission recommended the use of resource management agreements (RMAs) to provide legally-enforceable property rights to all licensees.

It has been suggested that licensees should benefit from any work that results in incremental yield of the resources. For example, it is claimed that a timber licensee should be able to gain an increase in the allowable annual cut (AAC) by practicing intensive silviculture. Also, it has been suggested that the incremental yield should not be subject to royalty or stumpage.

Is a greater security of tenure a reasonable reward for practicing superior forest stewardship?

A related incentive may be to increase a licensee's allocation of resources. If a bad performer is penalized by removal of tenure (see following section), then a good performer could be offered increased allocation (i.e., take from the bad and give to the good).

Note: These options are not intended to be be mutually exclusive.

Questions and issues to be addressed:

Implications

- Can apply to all types of licensed use of the forest, but is often associated with timber management activities.
- The current area-based timber tenures (TFLs, FL chart areas and woodlots) are not considered sufficiently secure to justify enhanced stewardship.
- Create a stronger feeling of ownership to the forest that would motivate timber managers to aim for better practices.
- Public revenue would not increase from intensive silviculture, except through taxes.

Should the government (taxpayer) or the licensee have to bear the cost of rectifying forest practices that are judged to be sub standard?

Option 10D - Liability insurance

One proposal suggests that the industry should supply liability insurance for its actions. Many timber harvesting activities, such as road construction, slash burning, logging and reforestation may result in unforeseen costs if they are incorrectly carried out. Under the current system, the government and the public bears most of the risk of these liabilities, although companies can be held accountable for some failures with reforestation.

If this insurance is purchased from various insurance brokers, there would be a market-based assessment of the risk of poor performance. Insurance companies would be able to do an actuarial assessment to determine the premiums – licensees that have good performance would pay lower premiums and would have an incentive to maintain good performance.

Implications

- Could be applied to all licensees.
- May place an unnecessary burden on the licensees that drives some firms from the market and imposes a barrier to the entry of new firms.
- Could result in very high premiums because of costly administration.
- Companies may elect to self-insure and choose bankruptcy in the event of a liability claim.

Note: These options are not intended to be be mutually exclusive.

Option 10E - Stewardship performance bonds

An alternative to liability insurance may be an administratively determined stewardship performance bond similar to that used in the mining industry. Some people are concerned that a company may go bankrupt and leave a legacy of poor forest practices. If these practices require expensive restoration work, then the government currently has to foot the bill. An annually determined stewardship bond would provide an assessment of the risk of failure and the likely costs of rehabilitation. This bond would be held by the government, the ministry or other agency to undertake remedial work of poor forest practices.

Questions and issues to be addressed:

What would be an acceptable amount for the bond? Should it be a set percentage, or graduated within established bounds?

Currently, *The Forest Act* and its regulations require a licensee to make a deposit that is conditional on meeting licence requirements (this deposit is calculated at a rate of $0.10 per m^3 of AAC for TFLs and $0.15 per m^3 of AAC for FLs). Although this deposit is a nominal amount, a licensee cannot operate if the deposit is used by the Ministry of Forests for remedial work – in fact, the ministry can collect any amount it requires by constantly removing the deposit and making the licensee replenish the account. The problem with this system is that it does not explicitly recognize the link to good performance or the risks of failure.

The people who object to the stewardship performance bond suggest that it becomes an additional cost to licensees. For some licensees, the bond may be a large amount of money and this would reduce the financing arrangements of the firm. Regardless of the financial instruments used (e.g. cash, letter of credit, lien on assets), this bonding arrangement would increase the cost of capital for the firm.

Implications

- The stewardship performance bond would have to be determined in a credible manner.
- Good performers must receive lower bonding requirements.
- Could be expensive to implement.
- Must be based on independent audit and an annual assessment of the likely risk of failure.
- It may also act as a barrier for entry for new firms.

Note: These options are not intended to be be mutually exclusive.

Questions and issues to be addressed:

6.2 Penalties

As mentioned previously, there is a wide range of penalties prescribed under various acts and regulations. Many people have suggested that the existing penalties should be more rigorously enforced and new penalties introduced. The mechanisms for penalizing poor performers can be discussed in the following categories.

6.2.1 Removal or suspension of licences

Under most of the relevant acts and regulations, there is the mechanism to suspend or revoke the licence or permit of a poor performer. For commercial users, the removal of licences can result in an immediate halt of business with the resulting financial costs. This penalty is administered by the relevant government organization and is subject only to administrative appeal (although the decision could be challenged under *Judicial Review Procedures Act).*

Some people suggest that this penalty should be used more vigorously. Certain offences or a number of minor infractions should automatically lead to the suspension of the licence. If necessary, the licence could be permanently cancelled.

Should a licence be cancelled after repeated incidences of poor performance?

Others suggest that the government has no right to take people's livelihood away. They suggest that the current arrangements to remove deposit funds that are a condition of a licence can provide a temporary suspension of the licence. This allows the administrative organization the flexibility to use the funds for rehabilitation work without using fines or other time-consuming mechanisms. To keep their licence current, the licensee must "top-up" the deposit account or be technically in default of the licence conditions.

Option 11A - Automatic suspension or cancellation

Licences would be subject to automatic suspension or cancellation with certain types of offences. There would no administrative discretion in the system.

Note: These options are not intended to be be mutually exclusive.

Implications

- Some licensees would lose their businesses and people may become unemployed.
- There would be pressure on elected representatives to save businesses and jobs.
- The system may become too inflexible to adjust to special circumstances.
- There must be a system of appeal.

Questions and issues to be addressed:

Option 11B - Technical suspension of licence

Deposit accounts would be removed and licences placed in technical suspension. The funds could be used for remedial work.

Should fines be directed into a special account to pay for restoration costs?

Implications

- It would provide flexibility for administrators.
- The funds could be used to correct the problem.
- People may not have confidence in the system.

6.2.2 Fines

The ability to fine persons or companies is available under most of the acts and regulations. Administratively determined fines under *The Forest Act* for some offences can be calculated according to a formula that relates the penalty to the economic damage (e.g., penalties for the destruction and damage of young and immature trees). Most other fines are determined by the courts under *The Offence Act*, and are subject to appeal by higher judicial bodies.

Option 12A - Administrative fines

This type of fine would be specified by regulation and applied by some administrative body. There could be a graduated system of fines that match the penalty with the infraction.

Implications

- Fines can be quickly applied which avoids costly and time-consuming court processes.

Note: These options are not intended to be be mutually exclusive.

Questions and issues to be addressed:

- Greater consistency of fines.
- May be criticized because of administrative will to enforce.

Option 12B - Court fines

Fines would be a sentencing option under *The Offences Act* and would be subject to court interpretation.

Implications

What would be the public reaction to this type of penalty? Would it be effective in achieving better forest stewardship?

- There is often a public stigma that is attached to judicially-determined fines, regardless of the amount.
- Court ruling may result in adverse coverage in the media.
- Courts may be too lenient.
- Court process may be time-consuming and involve large social costs.

6.2.3. Imprisonment

Some people have suggested that people who are responsible for breaches of the Code should be held accountable and should face jail sentences. It is argued that this would reinforce the seriousness of the crime and identify the true perpetrators. This type of penalty, given its serious consequences, could only be dealt with by the courts, with usual avenues of appeal. In fact, *The Forest Act* allows for officers, directors or agents of a corporation to be held accountable for an offence and they may face imprisonment or fines (section 163). Some people suggest that this penalty should also extend to the staff of the Ministry of Forests.

Option 13A - Imprisonment

The imprisonment sentence would be specified in regulation for certain offences and should be used as a regular part of the penalty system.

Implications

- May make people aware of the seriousness of the infraction.
- It may be difficult to identify the actual individual who committed the infraction.
- It may be expensive and time-consuming.

Option 13B - Status quo

Jail sentences would exist as an option but only as a penalty of last resort.

Questions and issues to be addressed:

Implications

- The sentence would not be used because it is a threat rather than a punishment.
- There may be political pressure to make sure that offences are not pursued through the courts.

6.3 The enforcement climate

People have suggested that the Forest Practices Code should be framed within an organizational and political environment that encourages the appropriate use of penalties and incentives. They claim that the Code will be applied by people to people, so its success will depend on usual human motivations and weaknesses. A number of factors can affect the enforcement climate, such as past relationships, lack of accountability and outside interference.

Historically, the Ministry of Forests has been perceived to be in partnership with the industry to develop the timber resource and associated infrastructure. This perception has been reinforced by the close bonds between the industry and government foresters who often share similar education, values and background. To successfully apply a system of incentives and penalties, Ministry of Forests staff must recast themselves in the new role as coach and police officer: they must be prepared to apply the "carrot and the stick" to achieve enhanced stewardship of the forest.

Some people have suggested that there is political interference in the application of penalties under the existing administrative arrangements. It is claimed that local staff attempts to penalize a licensee have been thwarted by senior managers who have responded to political pressures. In evidence, people point to the fact that a major timber licence has never been suspended or cancelled due to poor performance.

Some people believe that the enforcement climate should recognize the potential impact of certain practices, rather than only apply penalties after the damage has been done. They suggest that the Code should

Questions and issues to be addressed:

recognize that some practices have the potential to create damage, and the people responsible for enforcing the Code (whether through monitoring or audits) should have authority to stop the practices prior to actual damage.

Option 14A - Enforcement is automatically applied

The regulations could lay out formal mechanisms so that incentives or penalties are applied automatically without discretion, although there would be some system of appeal and review.

Implications

- The system may be too inflexible to work.
- It would create a process-oriented system.
- The Ministry of Forests staff would lose a lot of discretion that may adversely affect work satisfaction.
- Penalties and incentives would be applied.

Who should be responsible for enforcement?

Option 14B - Independent body

An independent body, such as the community resource boards or the forest practices board, could be the agents responsible for incentives and penalties with some system of appeal and review.

Implications

- There would be a major shift in the current allocation of power between groups involved in forest administration.
- The independent body would require enforcement staff.
- The body may not be seen as credible or may face some type of interference.

7. Training and education

Questions and issues to be addressed:

Suggested principles

- *The safety of humans should be considered a high priority in timber harvesting activities.*
- *There should be cost effective standards and implementation processes.*
- *The Code should encourage users to become properly trained.*

Related issues

- *Public and user awareness*
- *User certification*

The issues of training and education are deeply entrenched in the debate about forestry issues. Some groups point to the lack of training for timber industry workers and the narrow education of professional foresters. Others lament the lack of "public education" and believe that a better informed public would be able to make rational decisions about the use and management of the forests. These issues were covered in depth in *The Future of Our Forests*, and there is no point in covering the same subject matter again.

However, the Forest Practices Code may have some impact on education and training issues. It has been suggested that the Code offers an opportunity to collate existing forest management information and to disseminate this to a wide audience. Also, the Code may provide the timber industry with the incentive to train and certify its work force.

7.1 User certification

The success of the Forest Practices Code will ultimately depend on the men and women who apply its prescriptions and guidelines to the forest. These are the forest users, which may include timber industry workers, ranchers, recreationists, biologists and foresters, although the decision about the Code's format may limit its application to specific groups.

Questions and issues to be addressed:

Should forest workers be certified as proficient in the Forest Practices Code? If yes, should such certification be mandatory or voluntary?

At some stage, all the Code's users will have to be informed about their obligations and responsibilities. This will be a large and expensive process, since the Code could affect thousands of people throughout the province in the timber industry alone. In some jurisdictions, a working knowledge of the Forest Practices Code is specified as a requirement of employment. For example, in some Australian states, timber workers must undergo safety and Code certification prior to working in the forest.

Previously, the Commission has recommended that government, industry and labour organizations should begin a voluntary forest training system that could eventually lead to an industry certification program. The Commission stated that the industry should consider training to be in their own self-interest, especially if they risk failing performance audits. Some companies already have established a training program for some activities like timber felling.

How do you allow for the possible development of new professions?

Some professional groups may need to be recognized within the Code for specific activities. For example, only registered professional foresters are able to sign a PHSP under the Silviculture Regulations. Other professional groups that may have a role in the Code include biologists, agrologists, engineers and technicians.

Option 15A - Mandatory certification

All potential users of the Code, including members of professional associations, would be required to pass a competency test of the Code's requirements.

Implications

Who should be responsible for paying for worker training?

- The definition of user could be very broad depending on the Code format.
- Certification would be time-consuming and expensive.
- Some forest users may be functionally illiterate and would fail the test.
- It would be an additional layer of regulation for industry.

Option 15B - Voluntary certification

A program would be established to inform users about their obligations and responsibilities under the Code. Individuals and groups would be encouraged to apply for certification.

Implications

- Not all users may be exposed to the information program.
- There could be non-compliance due to ignorance.
- The Code may have to be phased in gradually because of the slow rate of information dissemination.

Questions and issues to be addressed:

7.2 Public information

It has been suggested that the Forest Practices Code can play a role in improving public understanding of the issues of forest stewardship. Many stakeholders believe that there is room to improve the public's knowledge of forest practices and the consequences of different alternatives. The timber industry is particularly worried about the perception of customers in some foreign markets who have heard negative reports on the state of B.C.'s forest management.

The Code offers two avenues to improve the information the public receives about its forests. First, there is the potential for independent audit reports that could be used to inform the public about the state of management practices. These audits are discussed elsewhere in this paper (see chapters 5 and 8). Second, the process of consolidation of existing rules and regulations under the Code could be an opportunity to produce a comprehensive document for public consumption.

Will an open procedure for audits and public disclosure of results lead to a more informed public?

As stated previously, the Code will consist of a number of different instruments (e.g., legislation, regulations). However, the process of rationalizing and consolidating the existing rules and regulations so they can be integrated into the Code will provide a comprehensive overview of B.C.'s existing regulatory requirements.

This information could be published under a single cover, perhaps as a ring binder for easy amendment, and distributed to all forest users and to the interested members of the public, including some international groups. Another proposal is to produce an explanatory publication aimed at the lay person that describes the Code, its objectives and mechanisms for implementation.

Who should pay the costs of the public information programme?

Option 16A - Comprehensive code document

All the instruments that constitute the Code could be placed under a single cover to provide the official documentation. This could be

Questions and issues to be addressed:

widely distributed to give people an understanding of the Code's legal and administrative requirements.

Implications

- The documentation may be subject to periodic review.
- It would only be read and fully understood by those involved with its implementation.
- It would not assist public communication, but it would provide evidence of the Code's existence.
- It would be expensive to maintain and update.

Option 16B - Explanatory publication

An explanatory publication could be produced for a broad audience that gives an overview of the Code's objectives, processes and administration.

Implications

- It would have to be an easy-to-read document.
- It could be widely distributed and this may be expensive.
- There is a risk some important issues may be trivialized.

Note: These options are not intended to be mutually exclusive.

8. Public involvement

Questions and issues to be addressed:

Suggested principles

- *The Code should be implemented in an open, verifiable and accountable manner.*
- *There must be a systematic process for public input in the development, review and implementation of the Code.*

Related issues

- *Public audits*
- *Public empowerment and accountability*
- *Public appeal*

Throughout its deliberations, the Commission has considered processes to facilitate public involvement in the management of B.C.'s forests. In *The Future of Our Forests* 10 principles of an effective public participation program were identified (see Exhibit 5). As an integral part of the administration system, the Forest Practices Code must provide avenues for effective public involvement. Four key areas will be discussed: (1) the production of public audits; (2) public empowerment and accountability; (3) public appeal; and (4) involvement in the development process, which will be discussed in the final chapter.

Exhibit 5 - Principles for an effective public participation process

a.	It must have a legal mandate.
b.	The process must be easy to understand.
c.	Those involved must be accountable.
d.	Public access must occur at key levels of the process.
e.	Provision must be made to notify interested parties.
f.	People must have access to information.
g.	Participants must have adequate resources.
h.	Written reasons for decisions are essential.
i.	There must be a conflict resolution mechanism.
j.	There must be an appeal process.

Source: *The Future of Our Forests*, page 112

Questions and issues to be addressed:

8.1 Public audits

Many groups representing a wide spectrum of stakeholders have spoken in favour of public audits of forest management. As discussed in Chapter 5, audits can be viewed as a means of maintaining public accountability and credibility with the administrative system. Forest stewardship audits may have some similar requirements to existing financial audits: there could be independent professional auditors; there could be universally accepted audit standards; and there could be a mechanism to disseminate this information to interested persons. This section will discuss mechanisms to publicize the audit reports, since the first two requirements were discussed in previous chapters.

There is a large variety of mechanisms to publicly disseminate the results of forest audits. Some groups think there should be an annual report on the state of B.C.'s forests – a process similar to that of the Ombudsman's or the Auditor General's annual report. This mechanism was recommended by the Commission in *The Future of Our Forests*. Others believe that a detailed report of each audit should be made available to any interested groups or individuals, and a general summary for mass consumption. Some people think there is a role for the media to play in publicizing the results of the audit and the annual report, in similar manner to the close attention paid to some financial annual reports.

Option 17A - Annual report to the Legislature

The Chief Forester or other responsible body would make an annual report to the Legislature on the state of B.C.'s forests based on all the licensee and ministry audits.

Implications

- The audit report would become part of the public record.
- It may become a topic of Legislature debate.
- It may attract the attention of various news outlets.
- It may be expensive and time-consuming to compile.

Option 17B - Local public release of audits

Every licensee and ministry that engages in forest management activities would have their practices audited. Upon completion, the audits would be made available to the public in the local area.

Implications

- There would be no aggregation of audit information.
- People may have trouble getting the audit information that concerns them.
- The media may ignore the audits because the information is presented in a piece-meal fashion.

Questions and issues to be addressed:

Option 17C - Detailed and general reports

Each audit would be produced in two formats: a comprehensive document for people with a technical interest in the results, and a general "glossy" report that could be understood by a lay person.

Implications

- Reporting requirements would be expensive.
- People may be overwhelmed by the amount of information.
- The general report may be dismissed as superficial.

Note: These options are not intended to be mutually exclusive.

8.2 Public empowerment

There is a trend towards increasing community empowerment and accountability in public affairs. People have expressed dissatisfaction with the traditional decision-making processes and have expressed a desire to take more control over circumstances that affect their life.

Should some form of community resource board be created to have a say in the application of forest management practices?

If so, how would such an organization be made accountable for its decisions.

There are a number of ways that the Code could formalize public empowerment and accountability. In Chapter 5, two new administrative structures were identified as options: community forest resource boards; and a provincial forest practices board.

From a public policy perspective, the challenge is to empower community organizations and also create a sense of accountability. A number of problems have arisen around the province with school boards and hospital boards that reflect a narrow sectarian interest. There must be sufficient checks and balances in the system to ensure

Questions and issues to be addressed:

that public interest is being satisfied.

If such a community organization were to be elected, what functions should it perform?

The critical issue concerning community organizations is the amount of power that should be devolved to them. Some people suggest that the boards should exist only in an advisory capacity and should consist of appointed interested individuals. Others claim that the boards should have the full power over the management and allocation of the forests, and the board members should be directly elected.

Is there a role on the boards for local resource managers?

Option 18A - Appointed advisory boards

If created, the community resource boards or a provincial forest practices board should only have an advisory role, and the board members should be appointed by the government.

Implications

- The boards could only recommend policy but not have the power to implement their recommendations (i.e., not held accountable).
- The public may not take ownership of the boards and would consider them government "window dressing."
- There may be more efficient mechanisms to get public input into policy development.
- It may be seen as a continuation of the status quo.

Would boards elected in different parts of the province pursue widely different policies? How can boards protect the interest of the whole province?

Option 18B - Elected management boards

If created, community resource boards and a provincial forest practices board would be elected and would have the power to formulate and implement management decisions.

Implications

- May be considered a parallel structure to the existing representative democracy.
- Boards may pursue completely different policies that create different standards and operating conditions.
- The government would have to devolve a large amount of its legal authority.
- Urban interests in the forest and overall public interest may not be addressed in the boards' decisions.
- The electoral system would be an additional public cost.

Option 18C - Combination boards

If created, the boards could be a balance of elected members and appointed members from identified stakeholder groups. The amount of power devolved to the boards could be limited to management planning and public appeals.

Questions and issues to be addressed:

Implications

- Could allow for a balance of interests on the boards.
- May be administratively expensive.
- People may not be sufficiently interested to vote for their representatives.
- Urban interests may not be adequately addressed.

Option 18D - Use existing organizations

The existing municipal councils and regional districts could have their mandate extended to include forest practices.

Implications

- The organizations are already established.
- Provide a mechanism for community representation.
- Urban interests may not be adequately addressed.
- These organizations may have a lack of expertise in forest management issues.

8.3 Public appeal

Many interest groups feel frustrated by the current decision-making process and the opportunities for appeal. Currently, groups can take their appeal to the various ministries or to the responsible minister. In some cases, legislation may allow groups to appeal decisions to an administrative tribunal or to the courts, but these opportunities are limited.

Should appeals be allowed? If yes, under what conditions? Who should pay for appeals?

Recently, there has been considerable discussion about alternative dispute resolution procedures. These can consist of administrative courts of appeal, forced mediation or private judgement services. The aim is to create procedures that are equitable, cost-effective and timely.

Questions and issues to be addressed:

Option 19A - Administrative appeal

An administrative appeal mechanism could be established by legislation. The appeals could be directed to a community board (if established), or a permanent tribunal under one of the existing government bodies. Cost sharing arrangements would be split between the government, the plaintiff and the defendant.

Implications

- The system would have quasi-legal status and would allow the establishment of a body of precedents.
- The appeals would be heard by people who have some expertise in forestry issues.
- There could be efficiency or merit tests for the appeals to reject spurious claims.
- Could have flexible rules of evidence and procedure.

Option 19B - Forced mediation

Once all other avenues of appeal have been exhausted, there could be a regulation that provides for forced mediation between the plaintiff and the defendant. The cost of the professional mediator would be borne equally between the parties involved.

Implications

- Would be considered a mechanism of last resort.
- There would be cost-incentives to settle the dispute quickly.
- Some disputes may be cumbersome because of a large number of parties involved.
- Some individuals or interest groups may find the process threatening, high-pressured and expensive.

How do you make alternate dispute resolution mechanisms binding on all parties?

Option 19C - Private judgement services

An alternative to the mediation route is the establishment of private judgement services. Some issues may not be suitable for mediation, and a direct ruling of right or wrong may be appropriate.

Implications

- Would be considered a mechanism of last resort.
- There would be cost incentives to settle the dispute quickly.
- Some disputes may be cumbersome because of a large number of parties involved.

Option 19D - Court appeal

The Code could allow decisions to be appealed directly to the courts. The rules governing "standing" could be amended to give anyone the right to challenge decisions.

Questions and issues to be addressed:

Implications

- Could be expensive and time-consuming.
- Courts may not have the expertise to make timely decisions on forest management issues.
- Some disputes may be cumbersome because of a large number of parties involved.

Option 19E - Ministerial review panel

The minister could appoint a panel as needed to review the appeal. The panel's decision would be binding on all parties.

Implications

- Groups would have to lobby the minister to get a panel to review their grievance.
- The appeals would be heard by people who have some expertise in forestry issues.
- Could have flexible rules of evidence and procedure.

Note: These options do not need to be viewed as mutually exclusive.

Questions and issues to be addressed:

9. Development process

Suggested principles

- *The Code should be based on the existing policies, practices and experience acquired over time.*
- *Practices are evolutionary so there should be a process of review in response to new science, changing public values and feedback on how the system is working.*
- *The Code should be developed in an open and highly visible manner.*

Related issues

- *Timetable*
- *Public involvement*
- *A living code*

The process used to develop the Code will be critical to its ultimate success. Mistakes, omission or oversights may leave an indelible stamp on the Code or any associated institutions.

To achieve the goal of enhanced stewardship and other objectives identified in Chapter 2, it has been suggested that the Forest Practices Code must be fully integrated into the legal and social processes that affect the administration of B.C.'s forests. It has been further suggested that the Code cannot be simply an appendage that is added as an afterthought to the existing forest management regime.

9.1 Timing

The timing of the Code may play a major role in its acceptance by forest users, the domestic and international public, and the government. In public policy matters, people often make reference to a window of opportunity for implementing new policy initiatives – when the window is open, the interested public and government agencies are receptive to change. However, this window also can quickly shut.

Is the timing good for a Forest Practices Code? Some people argue that the Code should be developed as a matter of priority. They suggest that there is a momentum to the development process because

people are increasingly thinking about the issues that the Code raises, and it is important to tap into this energy before it dissipates. Certainly, there is strong consensus that a code should be developed, but there is a range of opinions on the format and how the Code should be implemented.

Questions and issues to be addressed:

It is also argued that the Code is too important to rush. It will have long-term impacts on the way the forest is managed, and a number of complex issues must be resolved. It has been suggested that the process of consolidating all the existing rules and regulations will alone take 18 months.

What is the priority of the Code compared to other government responsibilities?

Option 20A - Priority development

The Code would be given priority by the government with legislation introduced in the Spring 1993 session.

Implications

- The government would have to commit resources to the Code's development.
- It may create an impression that the Code was rushed and the consequences may not have been fully evaluated.
- A critical path would be needed to focus attention on potential bottlenecks.

Option 20B - Non-priority development

The Code would be developed according to general priorities of the day. The legislation is introduced after the existing rules and regulations are consolidated.

Implications

- The Code may become side-tracked as other issues become more important.
- There would be sufficient time to evaluate all the necessary information.
- The Code may be superseded by some other initiative (e.g., national or international codes)

Questions and issues to be addressed:

9.2 Public involvement

Many individuals and groups are interested in the Forest Practices Code and would like to continue their involvement in the development process. This involvement will greatly assist the credibility of the Code, and it will help create a sense of ownership of the final product. There are a large number of public input models that may be appropriate, but the most relevant would be: (1) stakeholder representation on the responsible body; or, (2) a series of workshops and seminars to gain the largest input from the largest number of interested people.

Should some formal mechanism be created that ensures continued public involvement in the ongoing development of the Forest Practices Code?

Option 21A - Stakeholder representation

The major stakeholders could be represented on the responsible body, such as a commission, forest practices board or advisory committee.

Implications

- Group interests may be poorly represented.
- Could be captured by the interests of a few people.
- A small group may quickly arrive at consensus decisions.
- It may be relatively inexpensive and efficient.

Option 21B - Broad public discussions

Workshops, conferences and publications could be used to involve a wide range of individuals and groups who are interested in the Code.

Implications

- It may be expensive and time-consuming.
- It may be difficult to reach a consensus decision.
- If a consensus is reached, it will have a broad base of support.

9.3 A living code

The Code will exist in a dynamic environment, so it must be capable of adjustment over time. It must be a living document that is supported by organizations capable of learning new processes.

The Code must be able to incorporate or be compatible with the requirements of new legislation. For example, the government has announced a number of new legislative initiatives that could affect the way the Code is implemented. The proposed *Environmental Assessment Act* could dramatically alter the way resource decisions are made. The proposed *Freedom of Information Act* may create more open administrative processes and improve opportunities for public involvement. Proposed changes to *The Wildlife Act* could focus attention on endangered species and the potential impacts of some forest practices.

Questions and issues to be addressed:

It has also been suggested that the Code should have some formal linkage to the various ethical codes that are being developed by professional associations. The Association of B.C. Professional Foresters is currently amending its code of ethics and is hoping to gain legislative authority for road construction and harvesting practices. The Association of Professional Biologists is also finalizing a code of ethics that will govern its members' activities. The relationship between the various associations will continue to evolve, which will modify their interaction with the Code.

How do you create a living code? One solution is to design an administrative organization that is capable of learning and adapting to a changing environment. This requires a clear vision of purpose, innovative staff and broad community support. Another way is to establish a formal system of review on a periodic basis or in response to a particular event (i.e. new legislation or regulations).

How should a Forest Practices Code be modified or added to?

Option 22A - A learning organization

The organization that administers the Code could be established, or modified, to encourage learning and innovation. This would require skillful organizational design, and would be partially based on a clear vision of purpose and an innovative staff.

Implications

- There would have to be a broad agreement on the organization's vision.
- Organizations have a life cycle and it may need to be rejuvenated at some later stage.
- The organization may be captured by special interest groups.

Questions and issues to be addressed:

Option 22B - Periodic review

A formal process of review would be included in the legislation or regulations to assess the Code's performance after a set interval of time or in response to a particular event.

Implications

- The review process would become institutionalized.
- Review intervals may be inappropriate in times of rapid change.
- The reviews may become routine and bureaucratic.

Appendix 1

A summary of public submissions to the document: *A Forest Practices Code - July 1991*

The Forest Practices Code Report is a summary of the public input into the Forest Practices Code Discussion Paper. Two hundred and one (201) public submissions were received representing the forest industry (small and large operators), environmental groups, Registered Professional Foresters (RPF's), municipal and provincial governments, and individuals with no specific affiliations. These submissions were summarized and entered into a database. The database was then searched to identify major issues and themes. These issues and themes serve as the basis for this report.

Should a forest practices code apply only to Crown forest and range lands? If not, to what other lands should it apply?

There are a total of 112 responses to this question. Of these, the majority (73 respondents) favour including Crown and private land. Fourteen want private land excluded, and 25 suggest variations in between.

Seventy three respondents want Crown and private land included in the code. Some want "all forested land" included, while others simply want "all land" included. Some respondents specifically list Crown forest and range land, private land, federal land, parks, and native land, to be covered by the code. Generally, the reasons given for including all land, or all forest land, are environmentally based; that is, ecosystems do not follow ownership boundaries. Harvesting practices on private land affect the greater environment, other landowners, and other resources.

Fourteen respondents want the code applied to Crown land only. They argue that private lands are better managed than Crown land, and as such should be excluded; or that practices on private land should be voluntary, and encouraged through the use of incentives or public pressure; or that it would be too great an intrusion on property rights.

Is a statute code necessary to clarify and document forest management practices? If not, what approach would you suggest the Ministry of Forests take?

Of the 105 respondents who answered this question, only ten oppose the development of a statute code. They feel that there is already too much red tape.

The vast majority of respondents are in favour of the development of a statute code of forest practices. Many do not directly answer the question, but imply approval by discussing various aspects of the proposed code.

Are these the issues that a code should clarify? If not, what issues do you think it should clarify? Is a code the way to address these issues? If not, how do you think the issues can be resolved?

Many respondents feel that the list of issues is comprehensive and appropriate. However, there are many comments about specific issues, suggested revisions, exclusions and additions.

Public Values and Opinion: Environmental concerns are raised by many respondents, in a variety of contexts. Generally, there is a strong feeling that ecological integrity, biodiversity, and sustainable development have not been adequately addressed in this Discussion Paper.

Visible Impacts of Forest Practices: Many comments focused on the issues listed under this heading. The most caustic comment is that these are not visual impacts, but ecological. Specific issues are addressed, such as clearcutting, range management, the rate of harvest, setting aside wilderness areas, etc.

Public Understanding and involvement: There are a number of suggestions for ongoing public involvement and education. A frequent suggestion is for some form of community based decision making.

Safe Working Practices: Safe working practices are acknowledged as important, but some respondents feel they should not be covered in a code. Other respondents feel that safe working practices need to be clearly defined, and that training is a necessary part of safety.

Economic Viability: Some respondents feel this does not belong in the code as it is a marketing problem.

Operational Compliance and Enforcement: Many respondents feel this is critical. This area is of particular concern to foresters, environmentalists and the general public.

Is this list of principles complete? Do the principles above describe the intent of a code that you could support? If not, what should be the principles of a code?

Many respondents generally support the list of principles, although there is a variety of suggested changes. A few respondents disagree with the entire approach regarding the list of principles, but more have a few areas of concern.

There is a strong support for environmental protection. There are concerns about definitions, especially of biodiversity and sustainable development.

A number of submissions are concerned that the code be workable; that it be clear, simple, flexible, and responsive to changing needs.

There is some discussion of the need for public involvement, and education. A few respondents want to exclude the general public, but many more want ongoing, assured public involvement in forest management decision-making. Many foresters seemed to feel that the public must be "educated" to get an accurate picture of the forest industry.

Many respondents are concerned about the need for strict monitoring, auditing, enforcement and penalties. Many felt compliance measures were the key to a successful implementation of the code and that adequate resources are needed.

Are the elements listed above the ones that should be considered in a code? If not, what elements should be included?

Ninety-five respondents discuss elements of the code. Seventeen simply agree with the list. The remainder of respondents either replied "yes, but", and suggested additions or changes; or disagreed with the list more fundamentally, either with the overall approach, or because too many important elements are not included.

A common concern in the comments about the elements is the strong focus in the Discussion Paper on the forest industry, to the exclusion of other industries working in the forest, or to the well-being of the forest itself. Many of the suggestions recommend additional elements focused on protecting the forest biodiversity, sustainability, more elements regarding recreation, fish and wildlife habitat, water quality and quantity, soil conditions, no use of chemicals, no clearcutting, etc.

Respondents working in other industries are concerned that their needs may be compromised by the code, because of the focus on forestry. There is particular concern about range management, mining, and tourism.

Some professional foresters also felt that there was no need for a code or only a very broad (philosophical) one as the profession has its own code of practice.

How do you think a code should be implemented? Please give the advantages and disadvantages of your choice.

Of the 103 responses to this question, 41 recommend a legislated code, nineteen favour a contractual code, nineteen respondents recommend a self-administered code, and ten suggest a voluntary code. The other respondents recommend combinations, or would be satisfied with several options.

Those in favour of a legislated code believe it is the only way of ensuring protection of the forest, from both industry and the government. There is a high level of distrust, and a desire to legally bind the forest industry and the Ministry of Forests. Opponents of a legislated code fear that it would be too bureaucratic and inflexible.

Some opinions are in direct opposition (for example, some industry respondents want business as usual, which is exactly what some environment and public respondents want to stop). However, there is also the recognition that striking an appropriate balance is necessary. There are many suggestions for combining the best attributes of the various options. An ideal code would protect the environment, require "best behaviour" from industry and government, and be enforced, be strong enough to develop public trust in the process; and at the same time be flexible and non-bureaucratic.

What would be an effective process for developing a code?

Sixty one respondents discuss processes for developing a code. Thirty-eight respondents suggest a process involving continued public involvement. The most frequently recommended process involves a committee developing a draft code, then a round of public comments, perhaps through public hearings, workshops, or community meetings.

Nine respondents want a restricted list of participants, such as forestry companies, government, environmentalists (sometimes), but not the general public.

Six respondents recommend no further public involvement. They feel that the government should know what is needed by now, and that the government adequately represents the public. There was a strong desire to get on with the job and get the code implemented.

Appendix 2

A review of forest practice codes in other jurisdictons

ALASKA

Legal framework	ALASKA FOREST RESOURCES AND PRACTICES ACT, 1990. A compilation of the Forest Resources and Practices Act, 1978 with amendments passed in 1990.
Prescriptive/enabling	Enabling.
Scope	The Act runs to 19 pages, 8 of these dealing with administration and regulatory procedures. There are articles specifically on riparian management; state land reforestation; and wildlife habitat on private land.
Land tenure	The Act and proposed regulations apply to state, municipal and private lands.
Regulations	The Act provides for regulations. Draft FOREST RESOURCES AND PRACTICES REGULATIONS of May 1991 are still at public review stage (April 1992). These deal chiefly with: riparian standards; road construction; harvesting practices; reforestation; and insect control.
Supporting documents	n/a.
Authority	Mandatory.
Administration	The 1990 Act established a Division of Forestry within the Department of Natural Resources (DNR). Under the direction of the Commissioner of Natural Resources, the Division is responsible for the regulation of forest practices. A Board of Forestry, established within DNR, reviews proposed regulations and acts as a forests forum.
Geographic coverage	The state forests are dived into 3 regions: coastal; boreal forest of south-central Alaska; boreal forest of interior Alaska.
Incentives	n/a.
Penalties	Violations of the Act result in fines and other deterrents. Draft regulations propose "significant" penalties for non-compliance.
Performance bonds	—
Audit procedures	Board of Forestry coordinates monitoring of forest practices. The Board, State Forester and other agencies report annually to the Legislature.
Appeal process	Violation hearings are held before the State Forester, Regional Forester or other qualified designee. Appeals are heard by the Commissioner of Natural Resources or designee. A decision constitutes final agency action that may be appealed to the superior court.
Development process	Proposed regulations are undergoing lengthy public review, indicative of public interest in evolution of forest practices.

ALBERTA

Legal framework	Alberta has no forest practices code as such but under the FORESTS ACT, 1971 regulations exist that govern various forest practices and the Department of Forestry, Lands and Wildlife has issued several books of guidelines. The TIMBER MANAGEMENT REGULATION includes brief rules for timber harvesting and reforestation. A TIMBER HARVEST GROUND RULES MANUAL, 1991 is being revised for re-issue at the end of 1992.
Prescriptive/enabling	Enabling.
Scope	[other notes of this section explain]
Land tenure	Forest Act, Regulations and guidelines apply to all Crown forest land.
Regulations	New reforestation regulations with revised free-to-grow performance standards were legislated on March 1, 1991. Timber Management Regulation includes brief rules for timber harvesting and reforestation. The Forest and Prairie Protection Regulations govern fire hazard reduction and pollution and erosion control.
Supporting documents	FOREST LANDSCAPE MANAGEMENT STRATEGIES FOR ALBERTA, 1986, revised 1990, is intended to improve the visual quality of harvesting operations, particularly in areas of high public use or special scenic value. Operational guidelines for industry have been issued under titles such as RESOURCE ROAD PLANNING and STREAM CROSSING GUIDELINES. To accompany the new free-to-grow regulations the Forest Service in February 1992 issued a revised ALBERTA REGENERATION SURVEY MANUAL.
Authority	Regulations are mandatory on Crown forest land. Compliance with guidelines is voluntary.
Administration	Crown forests are managed by the Forest Service within the Department of Forestry, Lands and Wildlife.
Geographic coverage	—
Penalties	The Forests Act provides for penalties for violation of its provisions and regulations.
Performance bonds	Performance bonds are required on quota bids.
Audit procedures	The Forest Service monitors compliance.
Appeal process	—
Development process	The Alberta Round Table on Environment and Economy, established 1990, and the Environment Council of Alberta are both working toward sustainable future strategies and their recommendations to government may impact on the evolution of forest practices legislation.

CALIFORNIA

Legal framework	Z'BERG NEJEDLY FOREST PRACTICE ACT, 1973 (Division 4, Chapter 8 of the Public Resources Code), effective January 1, 1990, and Regulations pursuant to the Act.
Prescriptive/enabling	Prescriptive.
Scope	Comprehensive Act covering forest regulation and many aspects of forest management such as harvesting plans and re-stocking. A 10-page section addresses timber management plans for "nonindustrial" holdings, i.e. those less than 1,012 ha in size.
Land tenure	State-owned and private commercial forest land, including the nonindustrial timber holdings.
Regulations	The Act provides for the State Board of Forestry to adopt rules and regulations for the content of plans and the conduct of timber operations. The forest practice rules are presented as "a working guide to aid timber operators". In 1990 and 1991 the Board of Forestry adopted a number of new and amended rules, such as the Northern spotted owl rules; rules for maintenance of erosion controls; and a consolidation of most wildlife rules into one article titled Wildlife protection practices.
Supporting documents	n/a.
Authority	Mandatory.
Administration	The State Board of Forestry, appointed by the Governor, is the rule-making authority. The Act and rules are enforced and implemented by the Department of Forestry and Fire Protection.
Geographic coverage	For administrative purposes there are 3 forest regions: Coast; Northern; Southern. Subdistricts exist, urban coastal ones having the more stringent rules.
Incentives	n/a.
Penalties	The Act provides for the Department to issue cease work orders. A violation of such an order may result in a fine or imprisonment.
Performance bonds	The Act provides for performance bonds or other surety, but in practice these are not common.
Audit procedures	Harvesting plans are required for all commercial forests, including the non-industrial. Performance, including stocking, is monitored by the Department. The public may bring action against the Board or Department for failure to carry out prescribed duties.
Appeal process	Appeals may be heard by the Board of Forestry.
Development process	Public hearings are held before the revision or adoption of rules.

COMMONWEALTH OF AUSTRALIA

Legal framework	No national Code exists, but the Department of Primary Industries and Energy in 1991 issued FOREST PRACTICES RELATED TO WOOD PRODUCTION IN NATIVE FORESTS: NATIONAL PRINCIPLES
Prescriptive/enabling	Enabling.
Scope	This 10-page statement was prepared for the Department by the Standing Committee of the Australian Forestry Council. It provides a uniform set of national principles for all States to follow for the better management of Australian native forests. Many of the principles can be applied to plantations but, as some differences may arise, a parallel set of principles to cover plantations is being developed.
Regulations	n/a.
Supporting documents	n/a.
Authority	Voluntary.
Administration	n/a.
Geographic coverage	Country-wide.
Incentives	n/a.
Penalties	n/a.
Performance bonds	n/a.
Audit procedures	n/a.
Appeal process	n/a.
Development process	Parallel principles for plantations are being developed.

IDAHO

Legal framework	IDAHO FOREST PRACTICES ACT, 1974 Amended 1980, 1986, 1989, and 1990 with pursuant RULES AND REGULATIONS.
Prescriptive/enabling	Enabling.
Scope	The Act prescribes the regulatory structure and regulations establish minimum standards for timber harvesting, road construction and maintenance, reforestation, use of chemicals, slashing management, and stream water quality protection.
Land tenure	State and privately-owned commercial forests.
Regulations	As stated above, Rules and regulations are in force.
Supporting documents	The State Department of Lands in October 1990 issued a 45-page document summarizing the Act, rules and regulations titled RULES AND REGULATIONS PERTAINING TO THE IDAHO FOREST PRACTICES ACT, Title 38, Chapter 13, Idaho Code. Clearly written, the document includes a 3-page rating guide for potential fire hazards.
Authority	Mandatory.
Administration	State Department of Lands. The Department's Director appoints a Forest Practices Advisory Committee to provide technical advice to the Idaho Board of Land Commissioners. The Board adopts rules establishing minimum standards for forest practices.
Geographic coverage	—
Incentives	—
Penalties	Violation of rules may result in a cease and repair order, a stop work order, and fines through the courts.
Performance bonds	Non-resident operators are required to submit a performance bond to the Department before forest activity begins.
Audit procedures	Forest practices are monitored by the Department of Lands.
Appeal process	Operators may appeal cease and repair or stop work orders initially through the State Board of Land Commissioners (Land Board) and then through the courts.
Development process	At least once a year the Director of the Department of Lands must meet with other state agencies and the Forest Practices Advisory Committee to review recommendations for amendments to rules or repeal of rules or new rules and them makes recommendations to the Board of Land Commissioners.

MANITOBA

Legal framework	SUSTAINABLE DEVELOPMENT STRATEGY FORESTS. 1991 draft sub-strategy of a land and water policy. Forest policies are being developed to guide the management of the forest resources as part of Manitoba's overall Sustainable Development Strategy.
Prescriptive/enabling	The Sustainable Development Strategy and enabling guidelines issued by the Department of Natural Resources (DNR) are prescriptive.
Scope	The 25-page illustrated Strategy workbook of forests objectives and policy proposals was prepared by the Manitoba Round Table on Environment and Economy for public discussion and has resulted in a further publication WHAT YOU TOLD US.
Land tenure	State-owned forests (roughly 95% of Manitoba's forested land).
Regulations	To be developed. They will include regulations for water and soil protection.
Supporting documents	FOREST MANAGEMENT GUIDELINES FOR WILDLIFE IN MANITOBA, December 1989. Developed by an inter-Branch Committee of the Department of Natural Resources (DNR), they are intended to promote the integration of forest and wildlife management. RECOMMENDED FISH PROTECTION PROCEDURES FOR STREAM CROSSINGS IN MANITOBA, also issued by DNR, is a 46-page book of general guidelines for stream crossing design and construction.
Authority	Voluntary.
Administration	Department of Natural Resources is responsible for the management of the state-owned forests.
Incentives	Incentives are being considered under the Sustainable Development Strategy for the forests.
Penalties	Penalties for infractions of harvesting and renewal plans carry penalties which include fines and loss of rights.
Performance bonds	—
Audit procedures	DNR make periodic checks, particularly for silviculture and herbicide practices.
Appeal process	—
Development process	Manitoba is working towards a new planning process which will entail the preparation of basin, watershed and local development plans. This new process will be the primary implementation mechanism for the forests strategy. Sustainable development principles and policies will be incorporated into the design and implementation of forest management programs.

MONTANA

Legal framework	AN ACT PROVIDING MANAGEMENT STANDARDS FOR CONDUCT OF FOREST PRACTICES IN STREAMSIDE MANAGEMENT ZONES, 1991.
Prescriptive/prescriptive	Enabling.
Scope	The Act is restricted to streamside management. It is intended to protect water quality of forest streams and provide guidelines for the management of wildlife habitat.
Land tenure	Applies to federal, state and privately-owned forest land.
Regulations	STREAMSIDE MANAGEMENT ZONE (SMZ) regulations are now being developed by the Department of State Lands and, after public review, should be law by Fall 1992.
Supporting documents	FOREST STEWARDSHIP GUIDELINES FOR WATER QUALITY, July 1989 are illustrated guidelines on best management practices (BMPs). FORESTRY AND WATER QUALITY is an illustrated field guide intended for private forest owners and other operators.
Authority	Act is mandatory; BMPs are voluntary.
Administration	Department of State Lands, Forestry Division.
Geographic coverage	—
Incentives	n/a.
Penalties	Under the Act, the Department seeks voluntary compliance through conferences and warnings but may require the operator to rehabilitate the site and pay penalties for damage to watershed or wildlife resources. Fines are deposited in the forest stewardship special revenue account.
Performance bonds	Private forest operators must enter into a Fire Hazard Reduction Agreement with the Forestry Division before cutting any timber. A performance bond is required, though most of the payment is refunded after prescribed hazard reduction work is completed. Penalty for default is cost plus 20%.
Audit procedures	Compliance monitoring by Department.
Appeal process	—
Development process	Proposed regulations receiving public review in Spring 1992. BMPs are expected to evolve over time.

NEVADA

Legal framework	NEVADA FOREST PRACTICE ACT of 1955 Amended 1971 (Chapter 528 of Nevada Laws on Forestry and Fire). It deals with forest practices and reforestation. A related chapter (472) STATE FORESTER FIREWARDEN deals with the office and powers of that office and the State Board of Forestry and Fire Control.
Prescriptive/enabling	Enabling.
Scope	The Forest Practice Act is intended to establish minimum standards of forest practice; to promote the sustained productivity of the forests of the Sierra Nevada; and to preserve the natural water supply of the state. It is concise but quite detailed and deals with cutting practices, riparian logging, erosion control, fire prevention and reforestation. It is published in a handbook titled NEVADA LAWS ON FORESTRY AND FIRE.
Land tenure	State and privately-owned forest land.
Regulations	Regulations are in force.
Supporting documents	—
Authority	Mandatory.
Administration	The State Forester Firewarden, reporting to the Director of the Department of Conservation and Natural Resources, administers all fire control and forestry laws outside of town site boundaries. The appointed State Board of Forestry and Fire Control advises the Director on forest and watershed protection policy.
Geographic coverage	—
Incentives	n/a.
Penalties	Violations of forestry and fire laws are punishable by law.
Performance bonds	A performance bond is required for a logging permit. It may be later reduced for adequate seeding or reforestation of the permit area.
Audit procedures	Compliance is monitored by staff of the State Forester Firewarden.
Appeal process	—
Development process	—

NEW MEXICO

Legal framework	REGULATIONS GOVERNING FOREST MANAGEMENT; REGULATIONS GOVERNING FIRE RELATED RESTRICTIONS. Pursuant to the FOREST CONSERVATION ACT, 1978 these regulations adopted December 19, 1989 supersede the regulations of 1979.
Prescriptive/enabling	Enabling and prescriptive.
Scope	The regulations, which are brief and simply expressed, are intended to assist in the prevention and suppression of forest fires; the control of forest pests; to maintain and enhance the economic benefits of the forest resources; and provide guidance towards good forest management. The 9-page document addresses permit applications, treatment of slash, reduction of erosion, re-seeding, and utilization.
Land tenure	State and privately-owned commercial forest land.
Regulations	As noted above.
Supporting documents	n/a.
Authority	Mandatory.
Administration	Energy, Minerals and Natural Resources Department, Forestry and Resources Conservation Division.
Geographic coverage	--
Incentives	n/a.
Penalties	Fines or imprisonment are prescribed in the Regulations for violations.
Performance bonds	—
Audit procedures	The State Forester and designees are empowered to enforce regulations and have police powers to apprehend and arrest violators.
Appeal process	—
Development process	—

NEW SOUTH WALES - AUSTRALIA

Legal framework	Forestry Commission policy statements define general policy for forest management: INDIGENOUS FOREST POLICY, 1976; and EXOTIC SOFTWOOD PLANTATIONS, 1982. The Forestry Commission has issued a series of CODE OF LOGGING PRACTICES booklets as well as field guides prescribing safe working practices.
Prescriptive/enabling	Prescriptive.
Scope	The CODE OF LOGGING PRACTICES series relate to (usually) each Region and each forest type, e.g. native forest or exotic plantations. These 4 x 6" booklets prescribe in simple terms good standards of workmanship; safe practices; and practices intended to protect the forest and its environment.
Land tenure	State-owned forest land, timber reserves, vacant Crown land, and a number of leasehold tenures.
Regulations	n/a.
Supporting documents	In conjunction with the Soil Conservation Service of NSW, the Forestry Commission in July 1990 issued STANDARD EROSION MITIGATION CONDITIONS FOR LOGGING IN NSW.
Authority	Voluntary.
Administration	The FORESTRY ACT, 1916 requires the Commission to manage the land under its control for timber production and for maintaining other forest values. The complementary planning instruments used by the Commission for long-term management are Management Plans and Preferred Management Priority (PMP) Classification, which defines priority use or special emphasis needs. Management of state forests also falls within the provisions of the Environmental Planning and Assessment Act and other legislation.
Geographic	NSW is divided administratively into 60 forest management areas.
Incentives	n/a.
Penalties	—
Performance bonds	—
Audit procedures	The Forestry Commission monitors for compliance with requirements of Harvesting Plans, which must now comply with the Endangered Fauna (Interim Protection) Act, 1991 and for good and safe forest practices.
Appeal process	—
Development process	—

NEW ZEALAND

Legal framework	NEW ZEALAND FOREST CODE OF PRACTICE Guidelines for the planning and management of forest operations issued in July 1990 by New Zealand's Logging Industry Research Association (LIRA) [since renamed Logging Industry Research Organization (LIRO)].
Prescriptive/enabling	Prescriptive.
Scope	The objectives of the LIRA Code are "to plan and manage forest operations with regard to their effect on environmental and commercial values." Values identified include soil and water, scenic, cultural, recreational, site productivity, safety, and commercial values. The Code is in loose leaf form and illustrated. It includes an environmental impact checklist.
Land tenure	State-owned and private forest land, including radiata pine plantations and indigenous forest.
Regulations	Regulations exist for the protection of forest health pursuant to the Forests Act 1949. The Act is under review.
Supporting documents	n/a.
Authority	The Regulations of the Forests Act are mandatory. LIRA's Code is voluntary.
Administration	The Ministry of Forestry is responsible for administering the Forests Act and Regulations.
Geographic coverage	—
Incentives	n/a.
Penalties	The Forests Act and Conservation Act, 1987 provide for penalties.
Performance bonds	—
Audit procedures	Forest companies have agreed on the Code as a voluntary baseline. Local government in the form of Regional Councils are responsible for monitoring compliance. In the event of a complaint a Regional Council staff member investigates and may recommend corrective procedures or a cease work order. Further damage would lead to prosecution.
Appeal process	—
Development process	There is a move to have the Code incorporated into the Ministry for the Environment's National Guidelines for Land Use. The 1991 omnibus Resource Management Act, administered by the Ministry for the Environment, brings together laws governing land, air and water and promotes decision-making that focuses on results or "intended outcomes" rather than on the regulation of resource use. It provides for community involvement in policy and decision-making and will doubtless influence future forests legislation.

NOVA SCOTIA

Legal framework	FOREST/WILDLIFE GUIDELINES AND STANDARDS FOR NOVA SCOTIA, 1987.
Prescriptive/enabling	Prescriptive.
Scope	The guidelines were developed by the Department of Lands and Forests in keeping with commitments in FORESTRY : A NEW POLICY FOR NOVA SCOTIA (1986) and WILDLIFE : A NEW POLICY FOR NOVA SCOTIA (1987). They are said to result from consulation with the Forest Advisory Council, the Wildlife Advisory Council and forest users of the province. Presented simply in an 18-page illustrated booklet, their purpose is to maintain or enhance fish and wildlife habitats in the forest environment.
Land tenure	The guidelines are implemented on Crown lands and the intent is that they be incorporated into forest management programs for private land (in Nova Scotia roughly 75% of the forest land is privately owned).
Regulations	n/a.
Supporting documents	Following the publication of FORESTRY: THE REPORT OF THE NOVA SCOTIA ROYAL COMMISSION ON FORESTRY in 1984, the Department of Lands and Forests issued several policy statements including the two cited above.
Authority	The guidelines and standards are mandatory on Crown land, voluntary on private land.
Administration	Department of Lands and Forests, Forestry Branch.
Geographic coverage	n/a.
Incentives	n/a.
Penalties	Only those that apply through existing legislation pertaining to resource protection and also use of pesticides.
Performance bonds	n/a.
Audit procedures	Compliance is monitored on Crown land by the Department.
Appeal process	n/a.
Development process	In Spring 1992 the Department is drafting enhanced and more detailed guidelines for forest management.

ONTARIO

Legal framework	CODE OF PRACTICE FOR TIMBER MANAGEMENT OPERATIONS IN RIPARIAN AREAS 1991.
Prescriptive/enabling	Prescriptive.
Scope	Formulated in 1991 by the Ontario Ministry of Natural Resources in consultation with the Ministry of the Environment expressly to protect water quality. It is intended to be used in conjunction with the Ministry's TIMBER MANAGEMENT GUIDELINES FOR THE PROTECTION OF FISH HABITAT and the Fisheries Branch POLICY FI.3.03.01.
Land tenure	All non-federal Crown forest land.
Regulations	n/a.
Supporting documents	ENVIRONMENTAL GUIDELINES FOR ACCESS ROADS AND WATER CROSSINGS, a manual which provide comprehensive and specific direction with respect to practices during the construction and maintenance of access roads. In addition, MNR has published a series of guidelines on silviculture; roads; moose management etc.
Authority	Voluntary.
Administration	Ministry of Natural Resources, which in Ontario has responsibility for forests, fish, wildlife, flora and fauna, lands and water.
Geographic coverage	The traditional forest management division of Ontario into 4 regions in Northern Ontario (where the land is 95% Crown owned) and 4 in Southern Ontario (where most land is privately-owned) is being changed.
Incentives	n/a.
Penalties	If inspection shows that water quality has been affected, the normal enforcement process occurs through the application of relevant legislation. Violation of stipulations in the two key documents of the licence, the Timber Management Plan or the more specific harvest approval plan may result in a stop order or prosecution.
Performance bonds	At present required only for silviculture contracting.
Audit procedures	Responsibility for implementing the riparian code and other guidelines rests with the industry or Crown forests staff. Practices are "monitored regularly."
Appeal process	n/a.
Development process	MNR is working towards remedial orders for damage caused by poor forest practices. Forest activities are at present exempt from a requirement of the Environmental Assessment Act that environmental assessments be prepared for all public sector undertakings. A decision of the EA Board expected in 1993 may rescind that exemption.

OREGON

Legal framework	FOREST PRACTICES ACT, 199. This Act substantially revised the Forest Practices Act that became effective July 1972.
Prescriptive/enabling	Prescriptive.
Scope	Revision of former Act with regard to certain reforestation, clearcut and harvest practices along visually sensitive corridors and which may affect water pollution. For the first time limits clearcut blocks to 49 ha and requires 300 ft. buffers between clearcuts.
Land tenure	State, municipal and privately-owned forest land (roughly 50% of the State's commercial forests).
Regulations	Regulations have still to be formulated. The Act is implemented with rules adopted by the State Board of Forestry. In force are: administrative rules; and forest practice rules for the 3 forest regions.
Supporting documents	Oregon's Department of Forestry is issuing a series of FOREST PRACTICES NOTES for field use: Some of the titles are: Riparian protection; Ditch relief culverts; and Road maintenance.
Authority	Mandatory.
Administration	The Board of Forestry develops and enforces State-wide and regional rules. Regional Forest Practices Committees appointed by the Board advise it on proposed rules or amendments appropriate to the region.
Geographic coverage	For administrative purposes there are 3 forest regions: Northwest Oregon; Southwest Oregon; Eastern Oregon.
Incentives	n/a.
Penalties	Enforcement actions are detailed in the Act. The Board of Forestry establishes the amount of a civil penalty. For certain violations of the Act or rules, fines or imprisonment may apply.
Performance bonds	—
Audit procedures	The Act authorizes the State Forester to investigate reported violations and to make preventative and compliance inspections. Increased State funding is being sought for monitoring.
Appeal process	Findings and orders of the State Forester may be appealed to the Board of Forestry.
Development process	The Act requires the Board to review and reclassify streams and design appropriate levels of protection. Rule review is not a requirement of the Act but appears to be ongoing

QUEENSLAND - AUSTRALIA

Legal framework	No State-wide Code exists but the Queensland Forest Service has developed a series of harvesting guidelines for the various forest types, e.g. HARVESTING GUIDELINES - NATIVE HARDWOODS, published September 1991.
Prescriptive/enabling	Prescriptive.
Scope	The guidelines have been prepared to ensure that harvesting operations are undertaken with minimal adverse site impact and to facilitate efficient harvesting operations. They draw on the principles enunciated by the Australian Forestry Council in their 1991 statement: FOREST PRACTICES RELATED TO WOOD PRODUCTION IN NATIVE FORESTS NATIONAL PRINCIPLES.
Land tenure	The Forest Service controls operations on State-owned land only.
Regulations	n/a.
Supporting documents	Two earlier publications of the Forest Service are: LAND CARE STRATEGY, 1989, which addressed the threat to the stability and sustained productivity of rural land posed by land degradation, and CONSERVATION STRATEGY, 1990, which reviewed the State's parks and conservation reserves.
Authority	Voluntary.
Administration	Queensland Forest Service, within the State's Department of Primary Industries.
Geographic coverage	Five broad forest types are recognized for the purposes of application of the guidelines.
Incentives	n/a.
Penalties	Timber operators agree to abide by conditions set out in harvesting guidelines. Failure to comply may result in fines or suspension of harvesting operations.
Performance bonds	—
Audit procedures	Compliance with guidelines is monitored by the Forest Service.
Appeal process	n/a.
Development process	—

SOUTH AUSTRALIA - AUSTRALIA

Legal framework	No Code exists. THE CROWN LANDS ACT, 1929 allows for the issue of licences to cut and remove timber from any lands vested in the Crown, but is subject to limitations under the NATIVE VEGETATION MANAGEMENT ACT, 1985. THE FORESTRY ACT, 1950 dedicates specific areas of Crown land exclusively for forestry purposes.
Prescriptive/enabling	Enabling.
Scope	State Forest Policy is to manage the forests for optimum fibre production, within a framework of sustainable yield. The Policy requires the Department of Woods and Forests to protect and conserve within departmental reserves a range of natural habitats of indigenous animals and plant communities, as far as practicable.
Land tenure	State-owned forest land.
Regulations	n/a.
Authority	Voluntary.
Administration	The Woods and Forests Department is the State forest management agency. The Forestry Board, within the Department, was re-established under the Forestry Act, 1950. The Board advises the Minister for Forests on a range of commercial activities, including plantation management, harvesting, log conversion and marketing of higher value products.
Geographic coverage	n/a.
Incentives	n/a.
Penalties	—
Performance bonds	—
Audit procedures	Harvesting is under general supervision of Woods and Forests Department.
Appeal process	n/a.
Development process	n/a.

SWEDEN

Legal framework	No separate code exists but the FORESTRY ACT effective January 1, 1980, amended on some points in 1983, provides a clear statement of the minimum requirements for good forest management. The Act replaced earlier legislation of 1903, 1923 and 1948.
Prescriptive/enabling	Enabling.
Scope	The Act presents guidelines for the management of all forest lands on a sustained yield basis. It contains directions and recommendations for establishing and tending stands, for clear-cutting operations, and for forest protection. Emphasis is given in the Act to the planting of new trees after final logging and the thinning of dense new and young stands.
Land tenure	The Act applies to all forest owners.
Regulations	Regulations were issued in 1987 as a 115-page book, SKOGSVARDS LAGEN HANDBOK, 1987.
Supporting documents	n/a.
Authority	Mandatory.
Administration	The enforcement authority for the Forestry Act is the local Forestry Board (Skogsvards-styrelser) in each of Sweden's 24 counties, under the jurisdiction of the National Board of Forestry (Skogsstyrelsen).
Geographic coverage	Forest management units correspond to the 24 Boards.
Incentives	n/a.
Penalties	Violation of the forestry regulations may lead to the issue of an injunction, a prohibition and a fine or to charges being pressed in court.
Performance bonds	Guarantees may be required for cutting rights in forests difficult to regenerate and in protected forests.
Audit procedures	Forestry plans are required for every timber holding and management performance is monitored by the local Forestry Board under the overall supervision of the National Board of Forestry. The local Boards have power to prescribe or prohibit certain actions.
Appeal process	n/a.
Development process	—

TASMANIA

Legal framework	FOREST PRACTICES CODE established by the FOREST PRACTICES ACT, 1985. The Code was developed by the Forestry Commission in 1987 and revised in November 1991.
Prescriptive/enabling	Enabling.
Scope	Policy is to manage the forests for sustained yield while recognizing non-timber values. The Code sets out the basic standards to protect environmental values during forest operations. It has five parts and deals with pre-harvest planning; road access construction; harvesting practices; reforestation; and maintenance of forest health.
Land tenure	Like the Forest Practices Act, the Code applies to both Crown and privately owned forest land.
Regulations	—
Supporting documents	FOREST AND FOREST INDUSTRY STRATEGY. Coordinated by Tasmania's Forests and Forest Industry Council and released in June 1990, the draft strategy outlines a continuing process for prevention of forest conflicts and recommends a review of forest practices.
Authority	The Code is mandatory.
Administration	The Forestry Commission, the state forest agency, is empowered under the FORESTRY ACT 1920 to manage the state forests, timber reserves and forest reserves. The mandate includes the five Concession areas of up to 200,000 ha in which forest companies have pulp-wood cutting rights. Commission officers administer the Code through approval of Timber Harvesting Plans and inspection of operations. Under the Forestry Act forest management plans are required for conservation areas which are significant. These are written by the Commission in consultation with the Department of Parks, Wildlife and Heritage.
Geographic coverage	—
Incentives	—
Penalties	—
Performance bonds	—
Audit procedures	Compliance is monitored by Forest Practices Officers of the Forestry Commission.
Appeal process	Appeals and disputes are heard before the Forest Practices Tribunal, whose members are appointed by the Minister for Forests.
Development process	—

VICTORIA - AUSTRALIA

Legal framework	CODE OF FOREST PRACTICES FOR TIMBER PRODUCTION Revised May 1, 1989.
Prescriptive/enabling	The Code is enabled by the CONSERVATION, FORESTS AND LANDS ACT, 1987 which resulted from the drafting of a timber industry strategy in 1986.
Scope	The Code provides State-wide principles and guidelines to be followed and applied to each timber production operation through the preparation of detailed prescriptions in the Forest Management Plans and Forest Coupe Plans for public land or the planning scheme (or stipulations in permits issued under the scheme) for private land.
Land tenure	State and privately-owned commercial forest land, although the way the principles of the Code are applied may vary.
Regulations	Detailed operational prescriptions are being developed regionally. It was judged impractical for the Code to attempt prescriptions for the various forest situations found in Victoria.
Supporting documents	n/a.
Authority	Mandatory.
Administration	Under the Forests Act 1958 the Code is administered by the Department of Conservation and Environment (current title for 3 separate agencies amalgamated in 1990).
Geographic coverage	The State is divided into 15 Forest Management Areas.
Incentives	n/a.
Penalties	The Code provides for penalties for non-compliance, to be specified in Regulations.
Performance bonds	n/a.
Audit procedures	Principles and guidelines of the Code are procedures expressed as prescriptions in the Forest Management Plan for each region and the Forest Coupe Plan required for each harvesting site on public land and in equivalent plans for private land. "Authorized officers" appointed pursuant to the Conservation, Forests and Lands Act monitor compliance on public land. Private forested land is controlled under municipal planning schemes.
Appeal process	n/a.
Development process	The Code is to be reviewed at least every 3 years to take account of new research information and field experience.

WASHINGTON

Legal framework	WASHINGTON FOREST PRACTICES RULES AND REGULATIONS, November 1, 1988, pursuant to FOREST PRACTICES ACT, 1974.
Prescriptive/enabling	Prescriptive.
Scope	The Act creates 4 classes of forest practices. For the 3 classes deemed to have some direct potential for damaging a public resource, forest operators must notify the Department of Natural Resources and in 2 cases have approval to start work.
Land tenure	State and privately-owned forest land.
Regulations	As noted above. Fairly minor changes have been proposed, e.g. to regulate harvest unit size and separation. If introduced, would be adopted end-June 1992.
Supporting documents	The regulations are published in a bound volume together with Act and a 54-page FOREST PRACTICES BOARD MANUAL intended as an advisory technical supplement for field workers The Timber/ Fish/Wildlife Agreement of 1987 was a cooperative approach to forest land management.
Authority	Act and Regulations are mandatory.
Administration	The Department of Natural Resources (DNR) implements and administers the Act. The Act established the Forest Practices Board which adopts rules governing forest management.
Geographic coverage	Field operations are divided into 7 administrative units within the two broad regions: East of Cascades; West of Cascades. Proposed rule changes would introduce some forest management on a watershed basis.
Incentives	n/a.
Penalties	Act provides for enforcement of regulations in steps from informal conferences to criminal penalties.
Performance bonds	In certain cases a timber owner or operator must post a bond.
Audit procedures	DNR supervises forest management. In 1991 the State's Timber, Fish & Wildlife Field Implementation Committee conducted and published a FOREST PRACTICE COMPLIANCE SURVEY of the State.
Appeal process	Appeals are made initially to the DNR, but the Act provides for further appeal to the Appeals Board and to the courts.
Development process	The Act provides for continuing review of the regulations. DNR must evaluate and report annually to the Forest Practices Board how the regulations and voluntary processes are working.

WESTERN AUSTRALIA

Legal framework	CODE OF LOGGING PRACTICE, first issued in November 1988 and revised November 1990. The Code was developed by the Department of Conservation and Land Management (CALM), the state forest agency. In 1987 CALM produced a comprehensive timber strategy for WA which, after public review, was approved by the Lands and Forests Commission in December 1987. Legally, the strategy forms a supplement to each of the management plans in the 3 forest regions of WA. Its objective is to provide "a plan for an efficient timber industry which is sustainable indefinitely."
Prescriptive/enabling	Prescriptive.
Scope	The Code of Logging Practice combines earlier codes that separately covered logging practices in hardwood and in softwood forests. The new Code is a concise set of rules governing logging operations, both hardwood and softwood.
Land tenure	The Code applies to the state forests and other Crown lands managed by CALM and private land where CALM is in control of logging operations.
Regulations	Forest Resource Management Regulations under the CALM Act are being formulated. Until they are endorsed by the State Parliament, regulations under the Forests Act, 1918 apply.
Supporting documents	A MANUAL OF LOGGING SPECIFICATIONS complements the Code and both documents have legal standing through incorporation into all contracts between CALM and logging contractors.
Authority	The Code and manual specifications are mandatory.
Administration	Under the 1984 Act CALM is empowered to manage state forests, national parks, nature reserves and other lands for timber production, recreation and other values. The Department also administers the Wildlife Conservation Act 1950.
Geographic coverage	There are 3 forest regions.
Incentives	—
Penalties	A breach of the Code "may be regarded as a breach of contract or licence."
Performance bonds	—
Audit procedures	CALM officers monitor forest practices.
Appeal process	—
Development process	Future directions identified by CALM include the promotion of better management of forests on private land and greater emphasis on visual aspects of forestry.

Appendix 3

A preliminary catalogue of existing rules and guidelines

A. ACTS

1. Forest Act, 1979
2. Ministry of Forests Act, 1985
3. Foresters Act, 1986
4. Boom Chain Brand Act, 1984
5. Carmanah Pacific Park Act, 1990
6. Forest Stand Management Fund Act, 1986
7. Range Act, 1979
8. South Moresby Implementation Stand Act, 1988
9. Wildlife Act.
10. Livestock Act.
11. Livestock Disease Control Act.
12. Pesticide Control Act.
13. Agrologist Act.
14. Highways Act.
15. Weed Act.
16. Railway Act.

B. REGULATIONS

1.	B.C. Reg. 552/78	Advertising, deposits and disposition regulation, 1979, 5p.
2.	B.C. Reg. 353/87	Annual rent regulation, 1987, 1p.
3.	B.C. Reg. 553/87	Campfire regulation, 1979, 1p.
4.	B.C. Reg. 103/84	Christmas tree regulation, 1984, 2p.
5.	B.C. Reg. 385/81	Credit to stumpage regulation, 1981, 3p.
6.	B.C. Reg. 397/89	Cut control regulation, 1989, 2p.
7.	B.C. Reg. 556/78	Fire precautions in relation to railways, 1978, 1p.
8.	B.C. Reg. 557/78	Forest fire prevention regulation, 1978, 6p.
9.	B.C. Reg. 557/81	Forest service road, right of way and recreation trail regulation, 1981, 6p.
10.	B.C. Reg. 220/81	Log salvage regulation for the Vancouver log salvage district, 1981, 13p.
11.	B.C. Reg. 14/92.	Mill closure cut reduction regulation, 1992, 1p.
12.	B.C. Reg. 354/87	Minimum stumpage rate regulation, 1987, 1p.
13.	B.C. Reg. 561/78	Penalties for the destruction and damage of young and immature trees, 1978, 2p.
14.	B.C. Reg. 562/78	Provincial forest regulation, 1978, 4p.
15.	B.C. Reg. 575/78	Range regulation, 1978, 7p.

16.	B.C. Reg. 356.87	Royalty rate regulation, 1987, 2p.
17.	B.C. Reg. 9/79	Rules concerning the use of recreation sites and trails, 1979. 2p.
18.	B.C. Reg. 563/78.	Scaling regulation, 1978, 17p.
19.	B.C. Reg. 147/88.	Silviculture regulation, 1988, 10p.
20.	B.C. Reg. 265/88.	Small business forest enterprise regulation, 1988, 4p.
21.	B.C. Reg. 564/78.	Snag and slash disposal regulation, 1978, 1p.
22.	B.C. Reg. 355/87.	Special forest products regulation, 1987, 1p.
23.	B.C. Reg. 258/91.	Timber harvesting contracts and subcontracts regulation, 1991, 31p.
24.	B.C. Reg. 567/78.	Timber marking regulation, 1978, 1p.
25.	B.C. Reg. 284/82.	Tree cone and tree seed regulation, 1982, 5p.
26.	W.C.B.	Industrial health and safety regulations, 1980.

C. PRESCRIPTIONS/GUIDELINES

1. POLICIES AND PROCEDURES

1.	MOF	Planning policies, 1990
2.	MOF	Ministry policy manual. 3 vols.
3.	MOF	Managing wilderness in provincial forests: a policy framework, December 1989. Integrated Resources Branch, Recreation Sect., Victoria, B.C. 22p.
4.	MOF	Forest planning framework. 1 vol.
5.	MOF	Forest region procedure letters (Various).

2. INVENTORY

1.	MOF	Forest and range inventory manual.
2.	MOF	Field handbook.

3. PROTECTION

1.	MOF	Field handbook for prescribed fire assessments in British Columbia. R. Trowbridge, B. Hawkes, A. Macadam, and J. Parminter. Land Management Handbook Number 11.
2.	MOF	Forest protection manual. 3 vols.
3.	MOF	Fire guard construction guidelines.
4.	Forest District	Smoke management plan (Various).
5.	Forest District	Fire action prescriptions (Various).

4. RANGE

1.	MOF	Grazing manual. 1 vol.
2.	Forest District	Grazing guidelines (Various).

5. RECREATION

1.	MOF	Recreation manual.
2.	MOF	Cave management handbook (including cave/forestry guidelines for the Vancouver Forest Region): operational handbook, 28p.
3.	MOF	Forest landscape handbook, 1981. Victoria B.C. 100p.
4.	MOF	Harvesting and silviculture guidelines for protecting recreation features, 1992. J.A. Hunt. Draft copy. 49p.
5.	MOF	Hudson's Bay Company heritage trail. Ministry of Tourism and Ministry Responsible for Culture, 1992. Draft management plan. 32p.
6.	Forest Region	Landscape management guidelines (Various).

6. ENGINEERING

1.	MOF	Engineering manual, 1990.
2.	MOF	Forest planning: a code to coordinated access management planning, 1989. Integrated Resources Branch, Victoria, B.C., 25p.
3.	MOF	Forest road and logging trail engineering practices. Draft, 1992.
4.	MOF	A guide for management of landslide-prone terrain in the Pacific Northwest, 1980. S.C. Chatwin, D.E. Howes, J.W. Schwab, and D.N. Swanston. Land Management Handbook Number 18.
5.	MOF	A handbook for forest roadside erosion control in British Columbia, 1980. W.W. Carr. Land Management Report Number 4.
6.	B.C.I.T.	Manual for roads and transportation, 1978. D.D. Holmes. 2 vol.
7.	Forest Region	Standard Specifications for Construction of Roads (Various).
8.	MOF	A Guide to plant indicators of moisture for southeastern B.C., with engineering interpretations, 1982. 119p.
9.	MOF	Log bridge stringers and needle beam sizing, 1981.

7. SILVICULTURE

1.	MOF	Silviculture manual, 3 vols.
2.	MOF	Correlated guidelines for management of uneven-aged drybelt Douglas-fir stands in British Columbia, first approximation, 1992.
3.	MOF	Enhancing our forest resources, a forest renewal program, 1991-1996.
4.	MOF	First approximation of correlated guidelines for free growing stocking standards for the ecosystems of British Columbia, 1990.
5.	MOF	Planting quality inspection. SOFOR Consultants Ltd, 1988. Victoria, B.C., 28p.

6.	MOF	Provincial guidelines for establishing stand tending projects. 51p.
7.	FRDA II	Canada - British Columbia Partnership Agreement on Forest Resource Development: Small-scale forestry program guidelines, 1991-1995, 12p.
8.	MOF	A guide to site identification and interpretation for the Kamloops forest region.
9.	Okanagan T.S.A.	Incremental silviculture objectives, March 1992. Draft.
10.	MOF	The B.C. forest renewal plan.
11.	Forest District	Reforestation obligations for partial cutting (Various).
12.	Forest District	Silvicultural obligations for salvage permits (Various).
13.	MOF	Guidelines for the development of a mountain pine beetle operational plan, November 1990.
14.	MOF	Pre-harvest silviculture site mapping, data collection and sensitivity evaluation handbook for interior sites.

8. TIMBER HARVESTING

1.	MOF	Ground skidding guidelines, with emphasis on minimizing site disturbance, 1987. Queen's Printer, Victoria, B.C. 58p.
2.	MOF	Interim soil-disturbance ground rules for the interior of B.C. Unpublished.
3.	MOF	Cruising manual.
4.	MOF	Scaling manual.
5.	MOF	Timber management manual, 2 vols.
6.	Forest Region	Appraisal manual (Various).
7.	MOF	Measuring soil disturbance following timber harvesting, 1987. L.M.H. Field Guide #5.
8.	MOF	Better harvesting practices for protecting forest soils, 1987. 29p.
9.	FERIC	Timber development planning for the B.C. interior: the total-chance concept, 1989. Handbook #4.
10.	Forest Region	Integrated resource management timber harvesting guidelines (Various).

9. INTEGRATED RESOURCE MANAGEMENT

1.	MOF	Draft report on managing for biological diversity in the Prince Rupert forest region, 1992.
2.	MOE	Describing ecosystems in the field. Ministry of Environment Manual 11.
3.	MOELP	Guidelines to maintain biological diversity in TFL #44 and TFL #46, 1991. Ministry of Environment, Lands and Parks. Unpublished draft. 9p.
4.	Forest District	Riparian management guidelines (Various).
5.	MOF	Guidelines for watershed management of crown lands used as community water supplies, 1979. Appendix G. 65p.
6.	MOF	Watershed workbook; forest hydrology sensitivity analysis for coastal British Columbia watersheds, 1987. D.J. Wilford. Interim edition.

		Queen's Printer, Victoria, B.C. 33p.
7.	DFO	Department of Fisheries and Oceans. 1990. Interior fisheries/forestry guidelines - background for guideline development. V.A. Poulin. V.A. Poulin & Associates Ltd., Vancouver, B.C. 27p.
8.	DFO	A handbook for fish habitat protection on forest lands in British Columbia. D.A.A. Toews and M.J. Brownlee, 1981. Vancouver, B.C. 166p.
9.	MOF	British Columbia coastal fisheries forestry guidelines. B.C. Ministry of Environment, Canada. Federal Department of Fisheries and Oceans, and Council of Forest Industries. 113p.
10.	MOF	Handbook for timber and mule deer management coordination on winter ranges in the Cariboo forest region. 1986. H.M. Armleder, R.J. Dawson, and R.N. Thomson. Land Management Handbook Number 13.
11.	MOF	Interim forest management recommendations to conserve Marbled Murrelet nesting habitat in coastal British Columbia. 1991. 2p.
12.	MOF	Managing young forests as black-tailed deer winter ranges. 1986. J.B. Nuberg, F.L. Bunnell, D.W. Janz, and R.M. Ellis. Queen's Printer, Victoria, B.C. Land Management Report No. 37. 49p.
13.	MOE	Guidelines for the protection of wildlife habitat in coastal British Columbia. 1976. Ministry of Environment. Unpublished draft. 14p.
14.	MOE	Preliminary grizzly bear management plan for British Columbia. Fish and Wildlife Branch, Ministry of Environment. 1979. 25p.
15.	Forest District	Lakeshore harvesting guidelines. (Various).
16.	MOE/MOF	Provincial harvesting guidelines for the management and maintenance of wildlife trees. March 1992. Draft.
17.	FERIC	January 1990. Integrated resource planning for forest operations in British Columbia.
18.	Forest District	Integrated management plan (Various).

10. PLANNING

1.	Forest District	TSA resource management plan (Various).
2.	Forest District	Resource planning manual.

11. MISCELLANEOUS

1.	WCB	Standard practices for pesticide applicators, 1986.
2.	MOF	Five year forest and range resource program. 1991-1996. Queen's Printer, Victoria, B.C. 16p.
3.	MOF	Managing your woodland: a non-forester's guide to small-scale forestry in British Columbia, 1988. Reid, Collins and Associates Limited.

Glossary

Access management

Refers to all stages of road and drainage facilities construction, maintenance and later deactivation following harvesting operations

Allowable annual cut (AAC)

The volume of timber which may be cut each year from a forest management unit consistent with sustained yield.

Biodiversity

The variety of plants, animals and other living organisms occurring in an ecosystem, the ecological roles they perform, and the genetic diversity they contain.

Bioregionalism

A cultural principle based on the idea of a community of interdependent life in the natural world of which humans are a part. Bioregionalists practice "living in place" and strive to bring about community decisions that will foster ecological sustainability.

Ecosystem

A forest ecosystem is a complex system of biophysical processes and living organisms and other interacting components and processes. It comprises plants, animals and microbes interacting with soil and climate.

Incremental or intensive silviculture

Improvement of natural stands or plantations with the intention of increasing yield. Techniques include thinning, brushing, weeding, limbing and fertilization.

Integrated resource management

The comprehensive management of two or more natural resources over a defined area so that resource quality is maintained or enhanced in perpetuity.

Landscape management

Forest landscape management as a component of integrated resource management has the goal of ensuring that modifications are compatible with existing landscapes.

Microclimate

The essentially uniform local climate of a small locality or habitat.

Non-consumptive uses

Forest use for aesthetic, cultural and spiritual purposes. Some types of recreation would be included, for example bird watching, nature walks, or wildlife photography.

Reforestation

The natural or assisted restocking of previously forested lands.

Riparian zone management

Harvesting practices designed to protect water quality along streams, lakes and other water bodies.

Small Business Forest Enterprise Program (SBFEP)

Expanded as a self-financing program of B.C.'s Ministry of Forests in 1988, its goals are to allow small operators to enter the forest products industry through timber sales, encourage diversification and regional employment, and ensure that the most efficient firms are awarded timber sales.

Visual quality objectives

Refers to the degree of acceptable alteration of a landscape. As a component of integrated resource planning, a forest landscape inventory identifies features and sensitivity, and visual quality objectives are established with respect for visual and aesthetic values.

Water catchment

The geographical area drained by a stream, lake or other water body.

Watershed hydrology

A science dealing with the properties, distribution and circulation of water in a geographical area drained by a river, stream or other water body.